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DESIGN FOR A MARYLAND STATE PLANNING MODEL

WITH ECONOMIC - ENVIRONMENTAL LINKAGES

MARYLAND DEPARTMENT OF STATE PLANNING

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MARYLAND DEPARTMENT OF STATE PLANNING
STATE OFFICE BUILDING
BALTIMORE, MARYLAND 21201

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DESIGN FOR A
MARYLAND STATE PLANNING MODEL
WITH ECONOMIC-ENVIRONMENTAL LINKAGES

By

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STATE OF MARYLAND
Marvin Mandel, Governor

MARYLAND DEPARTMENT OF STATE PLANNING
Vladimir Wahbe, Secretary

ABSTRACT

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Abstract: This design study proposes the development of state planning models for the Maryland Department of State Planning which extend the conventional analysis of economic variables to include the increasingly important environmental variables of waste and pollution emissions which are associated with production and consumption processes. The development of such models is particularly appropriate and urgent for the State of Maryland, which faces an increasing number of environmental issues, including the critically important problem of protecting and managing the Chesapeake Bay, its tributaries, and resources.

The models are designed to provide information to state planners and officials which will permit them to evaluate the economic and environmental implications of alternative development strategies including continuation of existing trends, accelerated industrial expansion or pursuit of maximum economic welfare benefits at minimum levels of environmental damage.

The models will generate systems of regional economic accounts and environmental accounts in order to provide quantitative disaggregated estimates of the consequences of alternative state development policies and programs. The report includes a technical supplement which describes a demonstration of the environmental submodel and an environmental classification system.

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MARVIN MANDEL
GOVERNOR

VLADIMIR A. WAHBE
SECRETARY OF STATE PLANN
NORMAN HEBDEN
DEPUTY SECRETARY

August 16, 1972

The Honorable Marvin Mandel
Governor of Maryland
The State House
Annapolis, Maryland 21404

Dear Governor Mandel:

I am pleased to transmit the enclosed report entitled "Design for a Maryland State Planning Model with Economic-Environmental Linkages."

Custom-tailored to the Maryland economy, the model described in this design study would provide a greatly needed technical capability for assessing the effects of alternative proposals for development upon personal income, State and local revenues and expenditures and all forms of waste generation on both a State-wide and subregional basis. As such, the model is intended to be responsive to the planning needs of both this Department and other State agencies.

Copies of this report are being distributed throughout the State.

Sincerely,

Vladimir Wahbe
Vladimir Wahbe

INTRODUCTION

Among the most urgent priorities now being faced at various planning levels is improved management of environmental resources. The design for a planning model presented in this report seeks to extend the conventional analysis of economic variables to include environmental variables associated with the production and consumption processes. The planning model is particularly appropriate for Maryland which faces an increasing number of environmental issues of both State and local concern.

The model will be capable of forecasting the economic-environmental impacts of alternative regional development plans and proposals. It will thus provide comparative information on personal income, tax revenues, State and local expenditures and the effects upon waste generation resulting from alternative patterns of regional development. In addition, the long-run interregional forecasting sub-model will provide interindustry readouts of important economic variables necessary for planning in such areas as transportation, manpower, education, health and social services. As such, the model will permit the evaluation of a wide range of socioeconomic changes and alternative development strategies.

A technical supplement which provides a demonstration of the environmental submodel and an environmental classification system is appended to this report. An example of the interindustry format to be utilized is also included.

Chapter 1

THE ROLE OF A STATE PLANNING MODEL IN EVALUATING STATE DEVELOPMENT ALTERNATIVES

Impending Fiscal Problems

Currently state governments face an expanding array of problems in determining what options are available for alternative development strategies and in attempting to meet the growing aspirations and expectations for timely improvements in the qualitative aspects of state development. The problem of converting from high to lower levels of military spending at the federal level and of dealing with national inflationary pressures are causing additional serious economic problems at the state and local levels.[1/] Requirements for the expansion and improvement in public services with limited revenue sources are requiring state governments to improve their capabilities for economic analysis and planning.

In Maryland, the Governor's Study Commission on the State Tax Structure has estimated that, while state and local governments will more than double their annual expenditures between 1969 and 1975 to a level of $4.9 billion, expected revenues at existing tax rates will fall short of this amount by about 10 percent, leaving a deficiency of $450 million, if present trends are continued.[2/] The problem of planning to meet this deficiency is aggravated by the uncertainty about the future of revenue sharing and about the impingement of other present and potential federal programs which significantly affect both revenues and expenditures of State and local governments. Balancing the budget, either by making certain

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[1/] United States Arms Control and Disarmament Agencies, Adjustments of the U.S. Economy to Reductions in Military Spending, Bernard Udis, editor, Washington, D.C., December, 1970.

[2/] Final Report, Study Commission on the State Tax Structure, Baltimore, Maryland, January 4, 1971.

savings on the expenditure side, where feasible, or by increasing tax rates, where politically acceptable, will require a careful evaluation of alternative fiscal policies, each one of which will have different effects upon the State's economy. In turn, the level of State and local revenues, which depend in part upon the tax structure, and required expenditures both will be influenced by the nature of economic development which occurs within the State.

Different types of economic activity have very different effects upon the State's overall fiscal situation and upon its environment. For example, if future development patterns result in the immigration of large numbers of unskilled, low-wage, seasonal workers, the State fiscal situation is likely to be more precarious than if future development patterns were associated with the creation of stable, high income jobs and improvements in the productivity of the existing labor force. Thus, while confronted with rapidly increasing problems of economic development, the State also has many forms of leverage which can influence the structure of development through its powers to tax, spend, legislate, plan, coordinate, and regulate. It is thus possible for the State to guide development in a way which will achieve balanced growth objectives.

State Planning Models

Efforts to deal with current and prospective fiscal problems and planning to meet these problems on a timely basis require large volumes of data on current economic activities, trends, future options and proper assessment of the interrelationships between them. The need to deal systematically with these strategic variables accounts in large measure for the effort which is increasingly being devoted to the construction of state planning models as a guide to state development.

In order to serve the purposes of policy analysis and planning, a state planning model must meet certain criteria. The model must present information in sufficient detail to highlight all of the important production, consumption, investment, governmental, and other activities within a specified region; it must delineate historical trends in these variables, and shed light upon the interrelationships between them; finally, the model must provide an accurate estimate of current conditions and indicate the range of options open for future development, along with measures of the benefits and costs attaching to each of the alternatives.

Because of these highly demanding requirements for state planning models, one approach which has been widely used is the regional interindustry or input-output model. By 1970 there were more than 100 regional interindustry models completed or in the process of development in the U.S.[1] Careful review of the literature on these models confirms the view that they are among the most potentially useful tools currently available for analyzing regional development problems, particularly those confronting this State.

The extension of early regional models was limited by inadequate data sources and the high cost of model development. However, widespread interest in regional models and their potentials for state planning have resulted in continuing efforts to collect needed data and overcome other technical problems associated with the development and use of such models. Notable among these efforts is the work of Professor Curtis C.

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[1] Phillip J. Bourque and Millicent Cox, An Inventory of Regional Input-Output Studies in the United States, Occasional Paper No. 22, University of Washington Graduate School of Business Administration, 1970.

Harris, Jr., of the University of Maryland, who has succeeded not only in generating vast quantities of needed data, but in turning out sets of consistent regional economic forecasts for states, counties and metropolitan areas.[1]

Professor Harris' work has contributed also to the development of a 100-order 1966 interindustry table for Maryland, which is included in Appendix II of the Technical Supplement. This type of table, with its accompanying tables of input coefficients and inverse elements, can be used to estimate the effects of any assumed change in spending for consumption, investment, government programs, and exports upon income, employment and output in the State. It should be noted that the interindustry models used for state planning and development purposes do not generate forecasts of consumption, investment, government expenditures, and other final demand items, but require instead that these variables be estimated by other methods for use as assumptions in activating the interindustry model.

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[1] See Curtis C. Harris, Jr., State and County Projections, a Progress Report of the Regional Forecasting Project, Bureau of Business and Economic Research, University of Maryland, College Park, January, 1969.

Chapter 2

THE NEED FOR INCORPORATING ENVIRONMENTAL LINKAGES IN STATE PLANNING MODELS

Interrelationship of Environmental Management and the Quality of State Development

In addition to the relevance of interindustry models for the analysis of state development problems, it is important to recognize the emergence of a new set of priorities in regional development. The traditional emphasis in state economic development upon industrialization for the achievement of economic growth is beginning to yield to more comprehensive concepts of general state development planning for the achievement of broad socio-economic objectives. The emerging contemporary view of planning general state development in support of human goals requires that models of regional development must be redesigned in order to measure environmental benefits and costs as well as economic benefits and costs.

One of the priorities now suddenly being faced at all planning levels is improved management of environmental resources. The need for extending economic development models to embrace environmental variables is particularly acute in view of the growing recognition that pollution and environmental stress are functionally related to the intensity and composition of economic development.

Extension of economic analysis to include not only the conventionally measured market outputs but also to include those formerly neglected materials flows which are an integral part of the total systems leads to the troublesome but inescapable conclusion that the magnitude of economic growth and progress in a state may also be an indicator of the magnitude of the waste management and pollution problem to be faced.[1]

Therefore, one important characteristic of a state planning model is that it be capable of not only analyzing alternative state development patterns in terms of sets of socioeconomic and environmental accounts which would indicate the impact of each alternative upon regional incomes, government revenue and expenditures, but that it also possess the capability of indicating the environmental impact associated with each development alternative. These social and environmental accounts should be designed to provide state planners and officials with the expanded information base required to insure more informed judgements about feasible future goals for the state, and about options for achieving these goals. Specifically, the upgrading of the quality of regional development will require added concentration upon efforts to expand those economic flows which directly affect human welfare and the quality of life, as compared with traditional expansion of aggregate economic activity and population. Among these critical economic welfare accounts, which should be the major focus of state planning, are personal per capita income in the private sector, and accounts for education, training, health, welfare, and other programs of investment in human capital in the public sector.

Acceptance of the linkage between economic activity and pollution should not lead to doctrinaire rejection of economic growth, but rather to a more sophisticated appraisal of the benefits as well as of the costs of regional development. The addition of environmental variables to growth models suggests than an important aspect of regional development is improvement in the quality of the environment, particularly as it affects human welfare, and not simply maximization of development, which necessarily accelerates the generation of waste flows.

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[1] Robert U. Ayres and Allen V. Kneese, "Production, Consumption, and Externalities," American Economic Review, Volume LIX, Number 7, June 1969, pp. 282-297.

The Need for Economic-Environmental Analysis in Maryland

The need for improving economic-environmental management, which is rapidly becoming evident in all advanced societies, is particularly urgent in Maryland. Although the State is fortunate in both the quantity and quality of its environmental resources, it shares with other states the problems of a rapidly expanding population pressing against limited space. Striking a reasonable balance between protecting the State's environmental resources for its citizens as compared with leaving their development to market forces will require information, analysis, and judgment of a very high order.

Among the difficult and complex issues which are pressing upon State decision-making processes are proposals for the location of conventional and nuclear power plants on the Chesapeake Bay and its tributaries, development of a new town in Southern Maryland, promotion of an industrial complex on the Eastern Shore, deepening of the channel for Baltimore harbor, and construction of major highways throughout the State. All of these developments promise economic gains through the creation of jobs, tax revenues, and growth at the cost of environmental quality. A state economic-environmental planning model can provide a consistent framework within which to evaluate the possible benefits and costs resulting from these and from alternative development proposals.

The research programs designed in this proposal are oriented towards identifying opportunities for achieving desired rates of economic development with minimal environmental damage and for finding opportunities to improve the overall quality of economic development. The continued growth of the U. S. economy, the advancement of technology, and the attraction of Maryland's environmental resources all point to the certainty that the magnitude and complexity of developmental problems will accelerate. Traditional regional economic growth models are inadequate in dealing with the full impact of development problems.

Much is now known about the economic advantages associated with regional industrial development, but little progress has been made in objective evaluation of the resulting environmental impacts of development. The models proposed here will fall short of the objective of providing full quantitative dollar estimates of all of the benefits and costs involved in evaluating environmental costs of economic development but are intended as a step forward in providing the kinds of information needed. The next section summarizes some of the major efforts proposed to date.

Chapter 3

ECONOMIC AND ENVIRONMENTAL MODELS FOR STATE PLANNING

Economic Models for State Planning

The size and complexity of state economic planning models depend upon many factors, i.e., purpose, nature and scope of study, availability of data, and other supportive resources. Regional economic accounts (subnational counterparts of the national income accounts) are a basic element of the models. While these accounts are useful in measuring the absolute and relative importance of production, consumption, income and other components of the regional economy, they possess limited capabilities either for explaining interrelationships among the components or for making forecasts.[1/] A promising new development is the use of supplementary social indicators by which means it is possible to assess the qualitative aspects of economic development.[2/] Detailed information on state economic accounts is published annually by the U.S. Department of Commerce in the Survey of Current Business. In many states, efforts have been made to break the accounts down for counties and metropolitan areas.

Various types of predictive models can be used to analyze the relationships among components in regional economic accounts and to permit forecasting. One of the simplest predictive models is the regional economic

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[1/] For an analysis of regional accounts, see Werner Hochwald, editor, Design of Regional Accounts, Baltimore, Johns Hopkins Press, for Resources for the Future, Inc., 1961, especially "Regional Income and Product Accounts," by C. L. Leven and works cited by Leven. In the same series see Elements of Regional Accounting, Werner Z. Hirsch, editor, 1964, and Regional Accounts for Policy Decisions, Werner Z. Hirsch, editor, 1966.

[2/] See Mancur Olson, (with covering letter by W.J. Cohen), Toward a Social Report, U.S. Department of Health, Education, and Welfare, Washington, D.C., GPO January 11, 1969.

base study.[1] Such models usually assume that total regional employment, income, and output in a region is a function of the level of activity of the exporting (or base) sectors. On the assumption that the base period relationship of export activity to total regional activity is constant, it is possible to derive regional economic multipliers used to forecast the response of total regional income, employment, and output to increases (or decreases) in exports from the region.

Tiebout has pointed out, however, that the impact of industry on the local economy varies widely depending upon the type of industry, its relationship to other local activities, the nature of the economy, and regional propensities to import, consume and invest, and other essential factors.[2] In expanding economic base studies to account for these necessary additional factors, Tiebout demonstrates that regional economic base studies can be made to approach the comprehensiveness of regional interindustry models.

Interindustry models actually include both regional economic accounts and regional economic base studies as integral components of more comprehensive functional models. As will presently be discussed, the final demand columns and the value added rows of regional interindustry models can be regarded as systems of regional economic accounts and the input coefficients and inverse elements of the interindustry model correspond to disaggregated systems of regional economic multipliers.

The advantages of interindustry models for systematic evaluation of detailed regional data in disaggregated form have contributed to their widespread application at the regional level. The further extension of interindustry models already developed for Maryland for use in analyzing the economic development aspects of state planning is recommended for use in conjunction with the economic-environmental models discussed below. These models are expected to go well beyond the capabilities of current interindustry models by providing a dynamic, long-run multiregion, multi-industry forecasting model.

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[1] For an excellent analysis of these models, see Charles M. Tiebout, The Community Economic Base Study, Committee for Economic Development Supplementary Paper No. 16, December, 1962.

[2] Tiebout, *ibid*.

Alternative Techniques of Socioeconomic Modelling with Environmental Linkages -- the State of the Art

Although efforts to introduce environmental analysis into economic models are comparatively recent, the urgency of the problem is so compelling that a number of investigators have already proposed conceptual models to deal with these issues. Before proposing a specific application for a Maryland socioeconomic-environmental model, it is important to examine the range of approaches which has been suggested thus far. The models herein discussed do not comprose an exhaustive list, but they represent the most promising developments to date.

Professor Wassily W. Leontief, the originator of input-output analysis, has explored also methods of extending his models for purposes of analyzing environmental phenomena.[1/] The Leontief model incorporates in the inter-industry matrix pollution abatement activities as an added input. One

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[1/] Wassily Leontief, "Environmental Repercussions and the Economic Structure, An Input-Output Approach," Review of Economics and Statistics, Vol. LII, August 1970, pp. 262-271, and "Air Pollution and the Economic Structure," Fifth International Conference on Input-Output Techniques, Geneva, January 11-15, 1971 (with Daniel Ford).

problem with the Leontief approach, however, is that it makes no provision for examining the waste outputs which necessarily flow from waste treatment processes. The essence of the environmental problem is that non-market flows of materials and energy accompany the economic flows from market processes. Satisfactory analysis of economic-environmental relationships thus requires a specific identification of the non-market materials and energy flows associated with economic activity.

One of the earliest efforts to sketch out a conceptual model of economic-environmental relationships with empirical content is the model developed by Professor Walter Isard and his colleagues at the Harvard University Graduate School of Design.[1/] The research resulted in a comprehensive report to the Department of Commerce which supported the project and in a shorter published article.[2/]

The Isard contribution is of particular importance because it attempts to identify not only economic activities and their waste emissions, but also includes ecological relationships and measurement of the impact of wastes upon ecological systems. Isard uses his model to demonstrate how traditional methods of regional analysis can be supplemented with ecological data to make comparative cost studies of alternative configurations of spatial development. In particular, the Isard model shows how the productivity of marshlands can be affected by alternative choices for location of development programs, and how the benefits and costs of these

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[1/] Walter Isard, Kenneth E. Bassett, Charles L. Choguill, John G. Furtado, Ronald M. Izumita, John Kissin, Richard H. Seyforth, Richard Tatlock, Ecologic-Economic Analysis for Regional Development, Harvard University Graduate School of Design under Contract No. CWB11422 for the Environmental Science Service Administration, U.S. Department of Commerce, December, 1968.

[2/] Walter Isard, et.al., "On the Ecology of Socio-Economic and Ecologic Systems," Regional Science Association Papers, Vol. 21, 1968, pp. 79-99 alternatives can be evaluated. The methodology is impressive also because it introduces natural processes such as photosynthesis into the same model incorporating traditional economic input-output processes.

Referring to the vast amount of environmental-ecological information required for such a model and for the optimal development of coastal reaches, Isard concludes that information of this type is at least essential for minimal analysis of development alternatives: "Regional planning must, at the minimum, consider both economic and ecological analysis and encompass the key interrelationships between the two systems."[1]

An early effort to extend regional input-output models to the analysis of environmental problems is the conceptual model of Professor John H. Cumberland of the University of Maryland and one of the authors of this report. The model recognizes that each disaggregated economic activity potentially results in environmental impacts evaluable in terms of benefits and costs.[2] Also, it emphasized the importance of the economic accounting system which could be developed from the interindustry sectors of the model to highlight such welfare variables as regional per capita real income and government revenues and expenditures for comparison with the environmental impacts associated with alternative regional development strategies and programs. The original Cumberland model has been extended and refined.[1]

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[1] Isard, Bassett, et.al., op. cit.

[2] John H. Cumberland, "Regional Interindustry Model for Analysis of Development Objectives," Regional Science Association Papers, 17, Philadelphia Meeting, November, 1965, published 1966, pp. 65-94.

Another contribution is the economic-environmental model developed by Professor Elihu Romanoff which attempts to identify the relationships between economic development and environmental impacts for a specified river basin.[2] In this approach, Romanoff uses a static regional inter-industry model with augmented matrices for water supply and sewage removal. The model is partitioned into sub-areas and separate reaches of the river. Changes in water quality are related to alternative pollution abatement practices. The model makes use of the feedback characteristics of an input-putput model to emphasize that increased local activity and local efforts to adopt antipollution policies themselves generate increased economic activities which, in turn, add to the pollution load.

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[1] John H. Cumberland and James R. Hibbs, "Alternative Future Environments," paper presented at the National Bureau of Standards, The Institute of Management Sciences, March 9, 1970; John H. Cumberland, Charles S. Gibson, Jr., Robert J. Korbach, Paul Gerhardt, James R. Hibbs, Bruce N. Stram, "EQUIPS-MABET Model Description and Worksheet Instructions for Preliminary Demonstration Phase of the Environmental Quality Information and Planning System (EQUIPS), September 23, 1970; John H. Cumberland, "Environmental Implications of Regional Development," Canadian Economics Association and Canadian Council on Regional and Rural Adjustment, Winnipeg, November 12-14, 1970; John H. Cumberland, "Application of Input-Output Techniques to the Analysis of Environmental Problems," Fifth International Conference on Input-Output Techniques, Geneva, January 11-15, 1971; John H. Cumberland, Charles S. Gibson, Jr., Robert J. Korbach and Bruce N. Stram, "A Model of Economic and Environmental Relationships," Association de Science Regionale de Langue Francaise, Creteil, June 2, 1971.

[2] Elihu Romanoff, "The Interdependence of a Regional Economy and a River," paper prepared for the Fifth International Conference on Input-Output Techniques, January, 1971, Geneva.

Although not interregional, the model is multiregional to the extent that water discharges and withdrawals are broken down by separate reaches of the river. For each reach, water quality is measured by the biological oxygen demand content, and biological oxygen demand emissions are discounted for subsequent downstream reaches to account for the waste assimilation capacity of the river. The model is put on a quarterly basis in an effort to identify seasonal water flow characteristics. Romanoff's methodology makes it possible to simulate regional growth and its impact on environmental quality since the model explicitly deals with the general equilibrium relationships between geographic location, industry structure, and water quality.

Among the most elaborate and comprehensive economic-environmental models to date are those developed by Robert U. Ayres, Allen V. Kneese and their colleagues at Resources for the Future, Inc., which followed the publication of a pioneering article by these two authors.1/ In this article, Ayres and Kneese contributed significantly to a fundamental understanding of environmental problems by pointing out the importance of the materials balance approach and emphasizing that all economic production and consumption either directly or indirectly results in materials and energy flows in addition to traditionally measured economic flows. The production of these wastes or residuals, which are discharged into common property resources creating external diseconomies, constitutes the essence of the environmental problem.

1/ Robert U. Ayres and Allen V. Kneese, "Production Consumption and Externalities," American Economic Review, Vol. LIX, No. 7, June 1969, pp. 282-297.

The ideas contained in the original Ayres and Kneese article subsequently were developed into a large-scale environmental-economic conceptual model.[1] A traditional Walras-Cassel general equilibrium model balanced both for economic and material flows constitutes the basis for the expanded model. The model both includes recycling and emphasizes externalities as physical exchanges; exchanges, however, which are not matched by economic flows creating divergencies between private cost and social cost. In order to demonstrate the cost to society associated with external diseconomies, shadow prices are derived.

The model is designed to achieve Pareto optimality in each sector by accounting fully for all material flows and estimating environmental taxes on production and consumption necessary to bring marginal social benefits in line with marginal social costs.

Ayres and Kneese recognize certain conceptual problems such as acceptance of existing income distribution, the existence of less than fully competitive markets and the need to simulate ecological relationships. There are other difficulties also connected with the model, i.e., the high cost of acquiring essential data, operational dependence upon knowledge of the utility functions of individuals, and unrealistic assumptions concerning the non-substitutability of environmental resources. Moreover, in order to generate prices for environmental services and preserve the advantages of market operations, reliable information would be needed on materials balances and economic interdependencies.

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[1] Allen V. Kneese, Robert U. Ayres, Ralph C. D'Arge, Economics and the Environment, A Materials Balance Approach, Baltimore, Johns Hopkins Press for Resources for the Future, Inc., 1970.

Clifford S. Russell and Walter O. Spofford, Jr., also of Resources for the Future, have attempted to improve the operational capabilities of the Ayres-Kneese model for application to a particular region.[1] While a static input-output model is used as a basis for constructing an economic-environmental linear programming model, as before, the components emphasized are the linear programming interindustry model, environmental diffusion models (later to include models of ecosystems), and receptor damage functions. In working with linear relationships, however, Russell and Spofford have had to assume: (1) the relationships in the model are deterministic (2) no interaction takes place between residuals (3) the environment cannot be modified to change its waste assimilation capabilities. Although the model does not take into account non-linear objective functions, it does embrace linear quality constraints. There are three important respects in which the methodology of Russell and Spofford differs from that of Ayres, Kneese and their colleagues: (1) the input-output and environmental sections of the model can be run independently (2) the model does not require a complete materials balance equality (3) separate river and air reaches are dealt with, as in the case of Romanoff.

While all of the economic-environmental models herein discussed have advanced the state of the art and are indeed relevant to Maryland problems, none fully satisfies the requirements for providing State and local public officials with a dynamic, long-run, interindustry, interregional model capable of supplying the degree and quality of information needed for making improved decisions. The primary objective of the Maryland State Planning Model is to incorporate the best features of these various alternative methodologies with new advances in order to provide definitive information essential for economic-environmental planning and needed analysis of alternative development policies and plans.

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[1] Clifford S. Russell and Walter O. Spofford, Jr., "A Quantitative Framework for Residuals Management Decisions," in Environmental Quality Analysis: Research Studies in the Social Sciences, Allen V. Kneese, editor, forthcoming.

Chapter 4

THE DESIGN OF AN ECONOMIC-ENVIRONMENTAL STATE PLANNING MODEL FOR MARYLAND

Objectives

The objective of the Bureau's research will be to develop for the Maryland Department of State Planning a model capable of forecasting the economic-environmental impacts of alternative regional development proposals, measured in terms of benefits and costs. In order to provide this operational capability, the model will embrace a set of economic and environmental accounts designed to measure such traditional economic welfare variables as personal income, local government revenue yields and expenditure requirements and the environmental and waste management implications of each alternative. Needed industrial and spatial geographic detail will be provided through disaggregation of the State economy into its industrial components and political subdivisions (i.e., twenty-four counties including Baltimore City). The design of the model is intended to respond to the planning needs of the Department of State Planning and also those of other State agencies.

The research tasks outlined here are planned to result in the completion of an operational model at the end of three years. However, the research will be based upon annual budgets planned in order to provide useful outputs at the end of each budget year. Additional details are shown in the Technical Supplement.

Research Tasks - Short-Run Model

1. The State Input-Output Model. The first component of the research will be a basic 1970 input-output model for the State of Maryland. This will be a static 100-order interindustry model which will be useful in making short-run forecasts of the State's economy, given any set of

assumptions concerning final demand. A model for 1966 has already been completed and is presented in Appendix II of the Technical Supplement.

2. Environmental Linkage Models. Another component of the research scheduled for early completion is a set of environmental coefficients which will be formulated in terms of the same industrial classification used in the interindustry model so that the two components can be linked to provide short-run forecasts of the total materials flow and waste generation created by the activity levels of the State economy. A waste classification system will be provided for approximately 30 types of major pollutants, including airborne, waterborne, and solid wastes.

The environmental model is designed to produce sets of interrelated accounts which can be used for a wide range of analytical purposes. The model will estimate gross wastes and net wastes, showing the cost of pollution abatement in the base period or the costs incurred for inputs needed to reduce gross residuals to net residuals. Quantities of gross and net residuals and wastes are shown as functions of the magnitude and mix of production and consumption activities. Therefore, it will be possible for the model to estimate the amount of each type of pollution which is directly and indirectly attributable to the output of each industry and to each type of consumer purchase. If data and funding permit, the model can also be used to estimate the cost to the State of raising environmental quality standards to meet various quality objectives. Additional detail on outputs of the environmental model and on their application are given in Appendix III of the Technical Supplement. These environmental coefficients will be based upon data collected from federal agencies and additional information developed in the course of the Bureau's work on national environmental relationships, an activity supported by the Office of Water Resources Research of the U.S. Department of the Interior.

3. State Economic Accounting Systems. A state economic accounting system will be developed and incorporated in the state input-output model. Economic accounts are fundamental in analyzing regional development, since they focus attention upon the important welfare magnitudes with which regional development is ultimately concerned. Such accounts are useful, therefore, for measuring base period welfare characteristics of a regional economy, identifying various future welfare goals, and assessing progress towards achievement of these goals for a regional economy. Further, they can provide estimates from the model of how specific developmental programs and projects will affect total and per capita personal income, various governmental revenue and expenditure items and environmental linkages.

The task of establishing regional economic accounts is difficult because of both conceptual and empirical problems involved in relating regional data to the corresponding national data used in national interindustry models and in the gross national product accounts. Development of a full set of accounts will require an intensive effort directed towards reconciling various data sources from State and local agencies, the U.S. Census, the gross national product accounts, and national interindustry models. The types of information and detail to be provided by the accounts are illustrated in Table 1.

Research Tasks - Long-Run Model

1. The Long-Run, Dynamic Interregional Interindustry Model. A major element of the final version of the Maryland State Planning Model

will be the dynamic forecasting model now being developed by Professor Harris. This 100-order model, which can be provided for the State and for any SMSA group of counties or individual county, will be a recursive model using industry location equations to forecast the regional demand and supply for each industry in the model.[1] For making medium and long-range forecasts, this model is much more appropriate than the usual static regional model which typically applies a long-run estimate of future final demand to a model based upon a much earlier base period.

2. State and Local Revenue and Expenditure Forecasting Model. Appended to the long-run interregional, interindustry forecasting model will be a governmental forecasting model to be developed by two Bureau staff members, Dr. Ray D. Whitman and Mr. A. Thomas King. The model will generate projections for a variety of revenue and expenditure items, such as those included in Table 1, for the State and for individual counties or groups of counties. Thus, the model will: (1) permit medium and long-range forecasts of the overall revenue requirements for alternative rates of growth in the State-local government sector (2) allow experimentation with alternative approaches to raising the required revenues (3) make possible an examination of the effects of alternative development schemes upon the government sector. While projections of this kind necessarily depend upon a host of simplifying assumptions and forecasts of human behavior, the model will provide more detailed information regarding relationships between socioeconomic variables (i.e., income, population by age

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[1] Curtis C. Harris, Jr., "Forecasting the Location of Industries," The Review of Regional Studies, Vol. I, November 1, April 1, 1969, pp. 1-5; Curtis C. Harris, Jr., "A Multiregional, Multi-Industry Forecasting Model," Regional Science Association Papers, Vol. 25, 1970, pp. 169-180.

Table 1

Exogenous Interindustry Section and Regional Social Accounts

Foreign Imports	Net Foreign Exports
Regional Imports	Net Regional Exports
Value added	
Personal Income	Personal Consumption Expenditures
Federal Tax Payments	Federal Government Expenditures
State Tax Payments	State Government Expenditures
Local Tax Payments	Local Government Expenditures
Capital Consumption	Capital Formation
State-Local Revenues (by source)	State-Local Expenditures (by function)
Personal Income Tax	Education - total capital
Corporate Income Tax	Health and Hospitals - total capital
General Sales Tax	Welfare
Property Tax	Highways - total capital
Other Taxes	Public Safety
Charges and Misc. Revenues	Sewerage and Sanitation - total capital
Federal Grants	Other

group and home ownership) and government expenditures than is generally the case with models of this kind.

Operation of the Short-Run Model

The short-run model, as shown in Chart I, is activated by the State final demand estimates. These estimates will be run through the regional input-output model which, in turn, will generate estimates of gross State outputs, personal incomes, government revenues, and government expenditures, all as measured in the State economic accounts. The State gross outputs will then be applied to the environmental linkages model in order to generate projection of gross residuals, treated and untreated residuals, and other components of the State environmental accounts.

These steps can also be described in the following algebraic terms:

The model will be driven by the final demand sectors of the interindustry model. Matrix multiplication of these final demand sectors by the interindustry inverse will generate the gross outputs and regional social accounts. The economic outputs will be estimated by input-output matrix equation:

$(X) = (I-A)^{-1} \cdot (Y)$ where

(X) = matrix of gross outputs

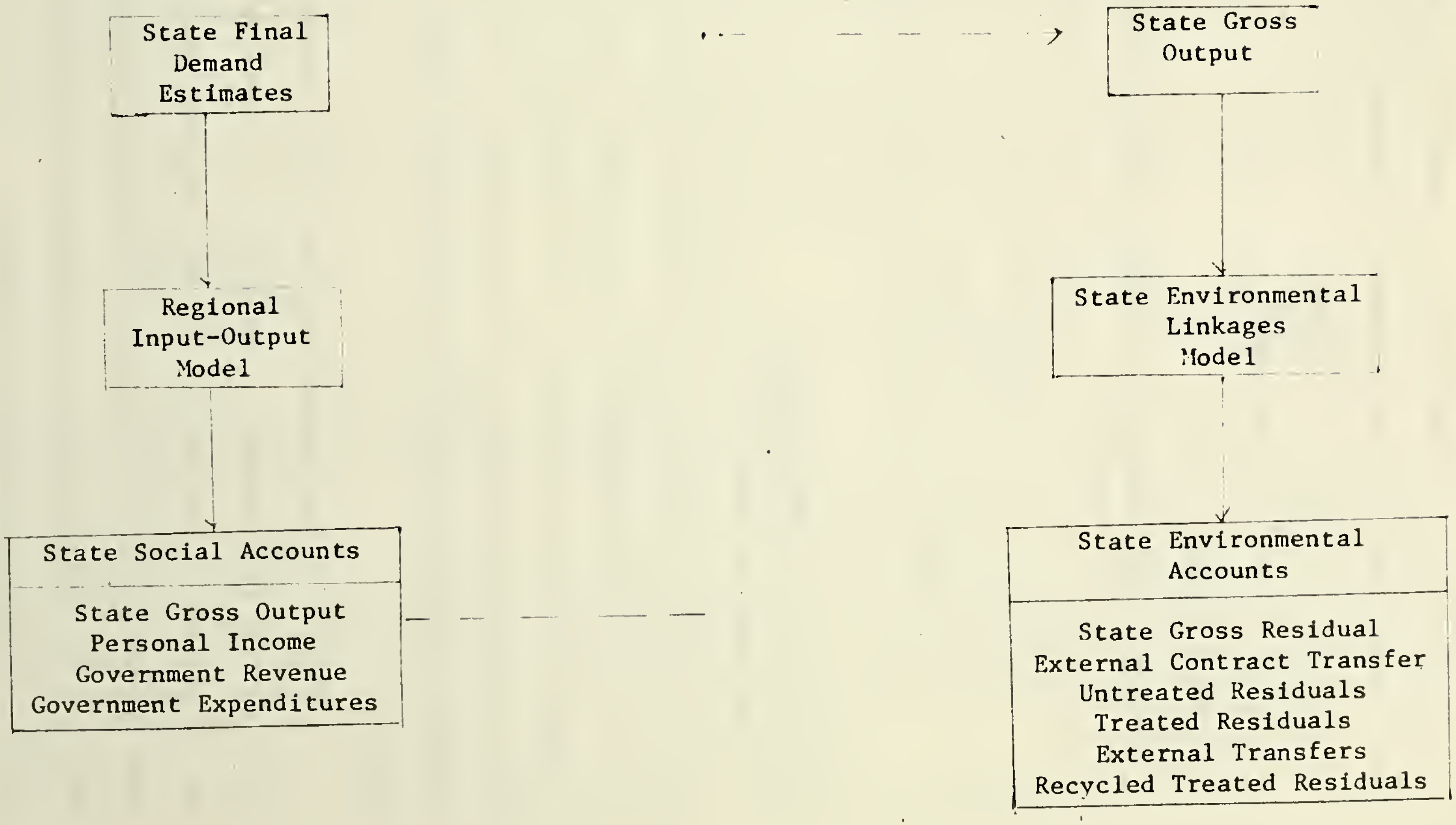
$(I-A)^{-1}$ = inverse of the identity matrix (I) minus the matrix of input coefficients

(Y) = the matrix of final demand elements

These gross outputs, in turn, will serve as the inputs into the environmental linkages model. Matrix multiplication of the environmental linkage coefficients by the sector of state gross outputs will generate the estimates of gross environmental residuals and the other components of the environmental accounts.

CHART I

Short-Run State Planning Model



Environmental linkages will be estimated by using outputs from the input-output model as inputs to the environmental model, such that

$(GR) = (X) \cdot (GRC)$ where,

(X) = matrix of gross outputs

(GRC) = matrix of grc_{ij}

grc_{ij} = gross residual coefficient relating residual j to gross output of industry i

$i = 1 \ldots, n$

$j = 1 \ldots, m$

Net emissions are similarly calculated, such that

$(NE) = (X) \cdot (NEC)$

Operation of the Long-Run Model

The long-run model will be operated in essentially the same way as the short-run model except that the State gross outputs, county gross outputs, and State and local accounts will be estimated by the dynamic, long-run forecasting model, rather than by the short-run interindustry model. An effort also will be made in the long-run model to run the estimates environmental emissions estimates through diffusion models. This is shown in Chart II.

A diagram of the economic portion of the long-run interregional forecasting model is presented in Chart III. The forecasting model is a recursive model. The output and price data from previous periods are used to explain output, population, employment and demand in the current period. The forecasts can be disaggregated into three sub-models for the initial forecasting period t as follows:

1. Location Sub-Model

Enter the base year shadow prices and values of other explanatory

CHART II

Long-Run State Planning Model

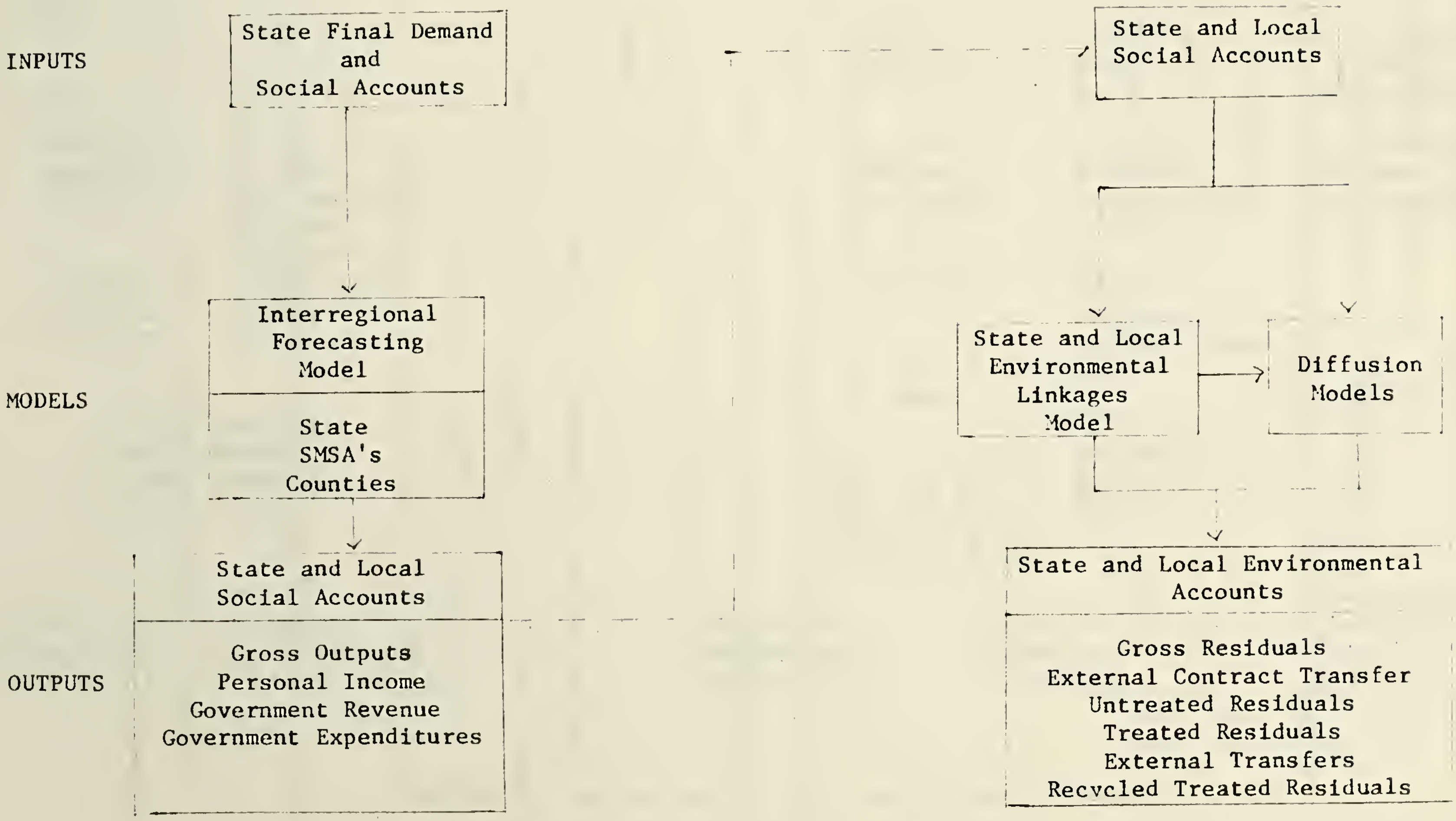
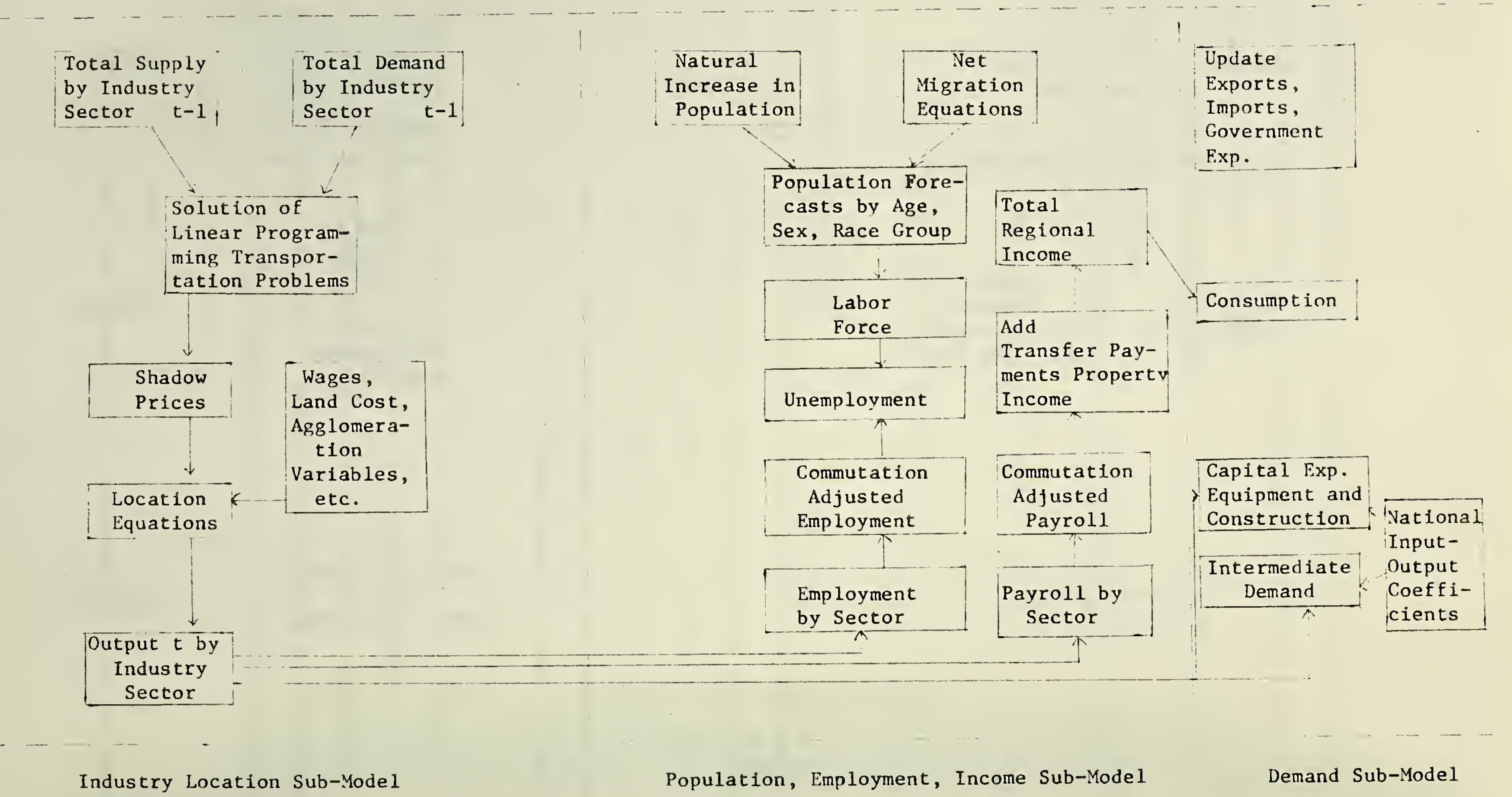

INPUTS
MODELS
OUTPUTS
State Final Demand and Social Accounts
Interregional Forecasting Model
State
SMSA's
Counties
State and Local Social Accounts
Gross Outputs
Personal Income
Government Revenue
Government Expenditures
State and Local Social Accounts
State and Local Environmental Linkages Model
Diffusion Models
State and Local Environmental Accounts
Gross Residuals
External Contract Transfer
Untreated Residuals
Treated Residuals
External Transfers
Recycled Treated Residuals

CHART III

Diagram of the Long-Run Interregional Forecasting Model


Total Supply by Industry Sector t-1
Total Demand by Industry Sector t-1
Solution of Linear Programming Transportation Problems
Shadow Prices
Wages, Land Cost, Agglomeration Variables, etc.
Location Equations
Output t by Industry Sector
Natural Increase in Population
Net Migration Equations
Population Forecasts by Age, Sex, Race Group
Labor Force
Unemployment
Commutation Adjusted Employment
Employment by Sector
Total Regional Income
Add Transfer Payments Property Income
Commutation Adjusted Payroll
Payroll by Sector
Update Exports, Imports, Government Exp.
Consumption
Capital Exp. Equipment and Construction
Intermediate Demand
National Input-Output Coefficients
Industry Location Sub-Model
Population, Employment, Income Sub-Model
Demand Sub-Model

variables into the industry location equations and make regional forecasts of change in industry output.

2. Population, Employment, Income Sub-Model
    (a) Forecast regional employment and payrolls using the output forecasts.
    (b) Adjust each region's total employment and payrolls for commuting in order to convert the figures from an establishment basis to a residence basis.
    (c) Forecast regional population utilizing population migration equations and the birth and death rates of each region.
    (d) Forecast regional labor force by applying a labor force participation rate to the population forecast.
    (e) Add to payrolls estimates of other components of personal income--property income and transfer payments--using the population and unemployment forecasts.
3. Demand Sub-Model
    (a) Forecast consumption expenditures using consumption functions that relate type of consumption with income. These equations would take into account the fact that the sales market of retail outlets in some regions may extend into other regions.
    (b) Forecast intermediate demand using output and national input-output coefficients.
    (c) Forecast capital equipment expenditures by relating them to output and using capital coefficients from a national input-output model.

(d) Update exports, imports, and government expenditures by assuming that the regional distributions are exogenous.

(e) Sum the components of demand.

The forecast for the next period t+1 would be made by using the forecast data of t in place of the t-1 data in recursive fashion, by repeating the steps used to calculate the t forecast.

The environmental linkage models and diffusion models will be used with the long-run forecasting model essentially in the same way or with the short-run interindustry model, i.e., by multiplying estimated gross outputs by the various series of environmental coefficients. The major difference is that while the gross outputs are generated by simple matrix multiplication in the short-run model, they will be estimated recursively in the long-run forecasting model.

4. Diffusion Models

Environmental emissions, waste residuals and pollutants will be estimated as functions of the activity levels of specific economic sectors in specific locations. However, the impact of these emissions is not limited to the location in which they occur initially. Airborne and waterborne wastes can be rapidly diffused and spread over wide areas. Normally this diffusion process will significantly reduce the concentration of pollutants according to known principles. Although concentrations drop as a function of distance the areas affected by any one emission will depend upon the nature of air currents or water currents in the diffusing medium, the intensity of the original concentration, the absorptive capacity of the receiving medium, and other variables. Therefore, in measuring the environmental impact of these emissions, it is important to link the emission data to diffusion models which will indicate the effect and intensity of its spread.[1]

The Bureau is not at this time planning to develop separate diffusion models, since state environmental agencies have already begun work on these models for air and waterborne emissions. However, the Bureau does plan to work closely with the specialists who are developing these models and to design the economic-environmental model to mesh effectively with the requirements of the State environmental agencies.

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[1] For oxygen sag models, see Allen V. Kneese, The Economics of Regional Water Quality Management, Baltimore, Johns Hopkins Press for Resources for the Future, Inc., 1964, pp. 15-17; Gardiner Brown, Jr., and Bricin Mar, "Dynamic Economic Efficiency," Water Resources Research Vol. 4, No. 6, December, 1968, p. 1155; Edwin L. Johnson, "A Study in the Economics of Water Quality Management," Water Resources Research, Vol. 3, No. 2, Second Quarter, 1967, pp. 291-305; For air diffusion models see Henry W. Herzog, Jr., "The Air Diffusion Model as an Urban Planning Tool," Socio-Economic Planning Science, Vol. 3, 1969, pp. 329-349; D. Bruce Turner, "A Diffusion Model for an Urban Area," Journal of Applied Meteorology, 1964.

Chapter 5

PROGRAM OUTPUTS--THEIR IMPORTANCE AND USE

1970 Interindustry Model

A basic analytical tool which will be provided early in the program is the 1970 interindustry economic model of Maryland. A partial view of the total amount of information included in this model is indicated by the earlier 1966 model which is reproduced in the Technical Supplement. The 1970 Maryland interindustry economic model will give a valuable overview of the Maryland economy with detailed information on 100 economic sectors. It can be used for a wide variety of analytic purposes, including short-range forecasting for periods in which it may be assumed that technology, interregional, and interindustry relationships do not change significantly. For longer periods in which all variables change, use of the long-run forecasting model will be more appropriate.

Economic accounting systems and environmental accounting systems designed for use with the interindustry model and the long-range forecasting model will also be provided. The combined use of these components is planned in order to permit the State to evaluate the impact of expected or proposed economic development on economic welfare variables and upon environmental quality as the function of different development patterns. The economic accounts will emphasize personal income, government revenues and government expenditures. The environmental accounts will emphasize the materials flows, energy flows, and residual generation.

The general equilibrium format of the model, with its disaggregation by industry and its forecasting capability all extend the potential uses of the model by the State. Its ability to forecast economic growth by location will assist in estimating needs for all modes of transportation facilities, schools, and other capital investment requirements. The accompanying environmental model will assist in estimating requirements for treatment facilities for sanitary waste, solid waste, municipal waste, and for all of the other effluents generated by regional economic growth. Because the model can be disaggregated to the county level, it will assist in analyzing intergovernmental fiscal and other relationships between the State and its sub-regions.

The Extended State Planning Model

The model is designed to indicate the nature of the interrelationships between economic development, income, government expenditures, tax revenues, and waste management. The combined use of the interindustry economic accounts and environmental models is also designed to indicate to the State what current trends, if continued, can be expected to mean to the State in terms of personal income, resultant tax revenues, required State expenditures, and the effects upon waste generation. In addition to an analysis of a continuation of existing trends, the combined models will permit the State to evaluate whatever options and alternatives it has for modifying past development trends. For example, it will be possible to use the interindustry model to estimate the impact upon the State of expanded efforts to attract a greater share of the total economic development occurring within the nation into Maryland. Another alternative which could be tested by the models is a reduction of economic growth rates in the State in order to assess expected changes in the same variables of employment, income, population, tax revenues, government expenditures, and waste generation.

However, one of the most promising applications of the model will be efforts to determine what alternative economic development patterns might be adopted in order to maximize the benefits of personal income levels and State tax revenues with minimal adverse effects upon government expenditure requirements and pollution generation. In view of the pessimism and uncertainty underlying current discussions of pollution and economic growth, the search for State economic development opportunities which can generate economic benefits with an acceptable range of environmental impacts will be one of the most important tasks ahead for regional economic development planning. We know of no other state which has attempted to develop economic-environmental models capable of dealing with these fundamental problems.

An important objective in State economic development is alleviation of poverty. This issue bears directly upon current debates about economic growth versus environmental protection because regional economic development is usually regarded as both necessary and sufficient for reducing poverty. However, the use of a disaggregated model such as the one proposed here may suggest more efficient programs for alleviation of poverty within a region. The type of jobs created in a region will differ depending upon the types of economic activity which are attracted, and by their occupational structure. Therefore this kind of model can suggest both the type of development needed to offer jobs to the currently unemployed within the region and can also suggest the types of education and training needed to assist the locally unemployed to qualify for the jobs available. The long-range forecasting model can also estimate the probable patterns of migration which are implied bv different development strategies. Because the level of economic activity determines the magnitude of the waste management problem, migration and population size are critical variables. The model proposed here deals explicitly with relationships between economic development, employment, population, and environmental quality, all of which must be evaluated in State planning.

Operation of the model will thus permit the State to evaluate a wide range of economic changes and alternative development strategies. One type of forecast would simply be a continuation of observed historical trends. Projection of these trends into the future by means of the model would indicate the expected values of the economic variables reflected in the economic accounts which include government revenues and expenditures as well as the associated environmental implications of each of these development strategies as forecast by the environmental linkages model.

In addition to forecasting the overall impact of State development aggregates, the model makes it possible to evaluate the incremental effects of any single component of final demand, such as government expenditures or even of any specific government or private program.

Limitations of the Study

It must be emphasized that the research discussed in this proposal is not designed to provide a mechanical decision-making model capable of automatically approving or rejecting developments on the basis of benefit-cost ratios or other single criteria, nor will it solve all problems of State planning. At best, the models will estimate some of the major direct and indirect economic effects and environmental impacts typically associated with alternative development patterns. Major decisions about economic policy are properly made at the political level. The objective of this research proposal is to bring together in consistent fashion a wider range of information about the expected future implications of alternative development strategies open to the State, so that decision-making about critical issues can be based upon forecasts of the probable consequences of alternative programs.

The coverage of the study and the accuracy of the results achieved will depend upon the level of financial support which can be allocated to this research effort. Much will depend upon the availability of funds to supplement estimates derived from national averages with more specific data derived from surveys of the Maryland economy. In addition to data problems, troublesome conceptual and analytic problems remain to be solved. Data are becoming available on the outputs of wastes, residuals, and pollutants, but the estimation of cost for reducing these emissions is yet in early stages. Estimation of the quantitative impact upon the environment of reducing these impacts is more difficult, and the problem of attaching values to reduction of environmental damage is becoming recognized as the most critical and high-priority problem in economic-environmental analysis. The research described in this proposal is designed to provide the central information base on options open to the State for achieving the economic development needed for improving the quality of life in ways which are consistent with environmental responsibility.

TECHNICAL SUPPLEMENT

APPENDIX I

The Selection of Environmental Linkages and the Design of a Waste Classification System

by

Robert J. Korbach

Introduction

In designing the research program recommended in this proposal, emphasis has been placed upon the identification of critical environmental linkages and the design of a waste classification system to describe these linkages. A number of working papers, some of which are included as appendices, have been prepared by environmentalists, and numerous meetings have been held with specialists in the field.

Although the nature of economic-environmental linkages in the real world is sufficiently complex to defy any simple explanation, it is possible to reduce this complexity to a few basic relationships. Economic processes of production and consumption generate, in addition to monetary flows, residual flows of materials and energy. Unless these residuals are reused, or recycled by man or nature, they become wastes, which are usually discharged by their emitters into common property resources, such as air and water. The air and water media may wholly or partially assimilate the wastes and transport the residuals through the environment where they impact upon receptors, such as human beings and other organisms. The problem of ultimate environmental concern is what effects these residuals have upon their receptors, especially human beings and species with important relationships to human beings.

This total process of economic-environmental linkages is a complex and dynamic one, which at this time cannot be completely modeled in a realistic way. However, much can be done with existing models, and with feasible extensions of existing models. The extension which is proposed in this paper is to add estimates of the flows of residuals to each of the economic production and consumption sectors identified in interindustry models. Limitation of constraints on information, time, and resources will impose narrow limits on what can be done to trace the flow of residuals through transport media and to measure these effects upon receptors. However, in terms of priorities in evaluating major environmental problems, evaluation of the magnitude and content of the residuals problem is an important first step.

Priority will therefore be given to identifying the different types of residuals generated by each economic sector as a function of the activity level in that sector. This section discusses the development of the proposed residual classification system to be used to measure environmental linkages.

Residuals Classification System

The extension of an economic regional planning model to include environmental linkages is part of a continuing attempt to widen our realm of decision-making to encompass all relevant variables. Decision-making requires, at the outset, a set of functional relationships generalizing reality into which data can be entered. The overall planning model, as previously described, gives a general description of the functional relationships. It is our purpose to address the latter portion of the decision inputs, the data bank. Specifically, this paper describes the process and rationale lying behind the selection of the residuals classification system.

The design of the classification system is a critical element in the overall model because of the many criteria which the system must meet. Of these criteria, the following are basic to any schema (2, p. 1).

(1) Simplicity: the system should be structured in such a way that laymen as well as specialists will feel comfortable working with it. This probably limits the selection to a single classification or combination of existing classifications, rather than constructing a new system.

(2) Consistency: the system should be consistent with the overall theoretical model. This implies the recognition of a 'materials balance' concept. It must be able to be applied to an economic input-output framework without the omission of any residual materials. On the other hand, it must be consistent with the data available. Because this project is not designed to construct a new data bank, but rather use existing ones, the classification system has to be in conformity with existing measurements.

(3) Comprehensiveness: the system should take into account all possible residuals. Consistency with the aforementioned 'materials balance' concept implies comprehensibility.

(4) Additivity: the system must have the versatility to expand or contract as is deemed necessary to meet planning uses or computer storage requirements. Disaggregation implies a common unit of measurement. The sub-sectors and sub-sub-sectors should meet the remaining criteria. Lastly, the additivity criterion and 'materials balance' concept necessitate that there be no double counting. The summation of highly disaggregated data must result in a meaningful number.

(5) Usefulness: the system must be structured in a manner so as to be useful to a wide variety of agencies with different needs. Conflicting

needs must be compacted into a single classification while maintaining the value to each agency.

The necessity of using existing data banks led logically to consultation with the agencies responsible for data collection in developing this classification system. Since the federal government is the overwhelming supplier of data, our main discussions were held with members of its agencies. Representatives of the U.S. Department of Commerce, the U.S. Department of Health, Education, and Welfare (then NAPCA, now in EPA), the U.S. Department of the Interior (then FWPCA, now in EPA), and the Council on Environmental Quality were consulted. A preliminary emission classification schema, which was part of a feasibility test of a federal environmental quality information and planning system, was circulated government-wide with a request for recommendations on suggested changes. Modifications and changes were introduced into our system, based upon these suggestions and the resulting data from the feasibility test.

Since the questionnaire for the feasibility run also received limited circulation in private industry, several private research agencies offered suggestions. Lastly, the system is based on a search of the literature. Particular areas of emphasis were air pollution, solid waste management, industrial waste treatment, and environmental management. Several specific references are given in the bibliography to this paper.

It cannot be overemphasized that the classification that follows is not a fixed or final system. The proposed system generally has followed a path of expansion as more potential pollutants are uncovered.

Five classification systems were examined as possible choices: (1) Chemical--which describes the composition of residual materials, (2) Physical--which describes the general properties of matter, (3) Physiological--which describes the effects on the senses, (4) Biological--which describes the effects of the materials on the environment, and (5) Economic--which describes the effects on society.

In order to explain this division, we have listed below the usual tests performed on residual materials in water courses and how they fit into these classifications (4, p. 25).

Table 1 - Types of Pollution in Sewage and Trade Wastes

A. Chemical	B. Physical	C. Physiological	D. Biological
Organic (carbon compounds) Inorganic (mineral compounds)	Color Turbidity Temperature Suspended Matter Foam Radioactivity	Taste Odor	Bacteria (pathogenic) Viruses Animals Plants

> Chemical pollution, due to the presence of organic or inorganic substances, is in general the commonest type of pollution and the most intractable. . . It must be noted too, that, with the exception of temperature, the physical and physiological manifestations of pollution are, strictly speaking, secondary phenomena arising from the presence of small quantities, often the merest traces, of chemical substances (4, p. 25).

Our approach to the problem of classifying residuals has been to use a chemical-physical system. The ultimate aim is to have a total chemical designation for the lowest material designation, but the data presently available would not allow this (8, p. 1-2). The superstructure for the specific chemical designations may be stated in terms of physical, biochemical, or chemical characteristics as long as they are mutually exclusive. Presently we have some data with a final description in physical terms which will be converted into its chemical composition as data improves.

The appendix contains the classification as we now envision it. In order to achieve additivity, the selection of a common unit of measurement was necessary. Weight per unit of time was selected, i.e., tons per year. The time level is necessitated by the fact that the economic model is on an annual basis. Several additional points should be noted. First, the chemical system is the only one that allows the many measurements to be added (e.g., Physical Characteristics - color, turbidity, temperature, foam, etc., cannot be meaningfully aggregated). Also, the choice of tons per year is not totally satisfactory. In many instances volume or concentration ratios are relevant for determining environmental impact. The problem is that volume is more often a variable than a parameter. Low-flow augmentation in rivers and compacting for land fill are two such examples where the amount of waste per volume of medium per unit of time is a variable. Our approach is to present the weight per unit of time and enter the concentration element into the decision-making process. Lastly the measurement of chemicals in tons per year is readily understood by laymen, it is consistent in that all materials can be accounted for, it is comprehensive, and it is useful when combined with the volume.

To meet the criterion of usefulness, it was necessary to separate the residuals into areas of agency responsibilities, namely air, water, and landborne. Although administratively the federal government has the Environmental Protection Agency to oversee all efforts, separate offices for each medium still exist. Maryland has its efforts residing in several departments: State Department of Health, State Department of Natural Resources, Environmental Health Services, and county and local agencies such as Washington Suburban Sanitary Commission.

Each receptor medium specified in physical terms forms the first major division. Media rather than physical states are used because a medium can embrace residuals of all physical states and yet agencies are charged with responsibility of media. Airborne wastes can be subdivided into two major categories, particulate matter and gases (6, Chapt. 2). The former is further divided into organic and inorganic substances. An alternative physical measure would be dust, fumes, and mists. The chemical nature reveals more of the potential danger than does this latter system, since the latter is based on the physical state and particle size (e.g., knowing that the particulate matter is sodium fluoride from an aluminum process rather than carbon black is more important than its particle size). Similarly, the gases are divided into organic and inorganic. The former is mainly concerned with hydrocarbons and the photo-chemical gases, ethlene and olefin, while the latter contains the most widely acknowledged pollutants, the carbons, sulfurs, nitrogens, ozone, and fluorides. No attempt has been made to exhaust completely all possibilities of material listing. Major items are all that are presented at this time.

Three other major categories are included. Radionuclides are considered as a separate group, although theoretically they should be included under particulate matter and gases. Radionuclides have been given special attention to emphasize their overwhelming importance to the environment despite being minute in weight. The last two categories are measures of energy. Conceptually, a total model would include an energy balance as well as a materials balance. We include these categories as a first step toward such a goal. As is the case with radionuclides, the importance of these two forms of energy encourages their inclusion, especially since they do not upset the first three categories in terms of materials balance.

Waterborne materials are currently receiving a large amount of attention in our studies and hence the classification structure is in a state of flux. Our previous data, at the lowest level of classification, have been mostly stated in physical terms. We have shown two structures: on the left is the current structure in terms of aggregated categories, and on the right is the long-range goal in terms of chemical measurements. Starting from the most general categories, we have divided the waterborne materials in both systems into biodegradeable and non-biodegradeable. This is simply a measure of the resistance to aerobic biochemical stabilization, therefore the former category is totally organic while the latter may be further subdivided into organic and inorganic. At this level of disaggregation the current system and long-range one separate. The former uses physical measurements such as suspended solids and dissolved solids with the actual physical materials listed (not presented in the appendix). The chemical structure on the right is a sophisticated structural breakdown (5, p. 1173-1200). As we are able, we shall delete the physical entries and convert them into chemical terms. As long as we remove the same number of pounds of physical material from our accounting schema as we add to the chemical structure, we should be able to utilize both systems concurrently and have no double counting. Lastly we again include radionuclides and thermal data, using the same rationale as was embodied in the airborne sector.

Landborne wastes follow a pattern similar to that for the waterborne materials. Current data are in physical terms as is shown on the right-hand side of the appendix, while the left side again displays our long-range objective (3). Because of very limited samples, refuse composition, at present, cannot be converted into its chemical constituents without having a high probability of error. Again radionuclides are listed in a separate category. Of the three media, this sector has received the least consideration to date and thus is presented in only a skeletal outline.

Several points should be re-emphasized in closing. The classification schema is chemical at its lowest level of measurement even though the superstructure may be physical, chemical or biochemical. Continuous revision of the schema is the 'modus operandi' because many of the early data were in physical terms. This system does not take into account biological or physiological effects and takes account of economic effects only peripherally by identifying the economic source of the emission. Interaction between chemicals in a medium or between media is not considered. Antagonistic and synergistic effects have yet to be incorporated. Lastly, this classification system should verify the idea that the use of this model is for long-range planning. It is not, and never has been, proposed to be a substitute for local sampling. Its objective is solely an acceptable approximation of the future.

APPENDIX

Emission Classification Systems
(weight/unit of time, tons/year perferred)

I. Airborne Material

- A. Particulate Matter
  - 1. Inorganic
    - a. silicon compounds
    - b. calcium compounds
    - c. aluminum compounds
    - d. iron compounds
    - e. manganese compounds
    - f. lead compounds
    - g. copper compounds
    - h. zinc compounds
    - i. sodium compounds
    - j. magnesium compounds
    - k. carbon or soot
    - l. tarry organics
  - 2. Organic
    - a. alephatic and aromatic hydrocarbons
    - b. acids, bases, and phenols

- B. Gases
  - 1. Inorganic
    - a. carbon-containing
      - (1) carbon monoxide
      - (2) carbon dioxide
    - b. sulfur-containing
      - (1) sulfur-oxides
      - (2) hydrogen sulfide and mercoptans
    - c. nitrogen containing
      - (1) nitric oxide
      - (2) nitric dioxide
      - (3) ammonia
    - d. ozone
    - e. fluorine and hydrogen fluoride
  - 2. Organic
    - a. hyrdocarbons
    - b. nitrogen compounds
    - c. oxidants
    - d. ethlene and olefin series

C. Radionuclides

D. Thermal (in BTU's)

E. Sound (EPNDB units)

II. Waterborne Materials

A. Biodegradeable 1. Suspended solids 2. Dissolved solids 3. Other	A. Biodegradeable 1a. fats 2a. carbohydrates 3a. proteins 4a. alcohols 5a. phenols 6a. aldehydes 7a. acids 8a. salts and esters 9a. amino acids 10a. cyanides 11a. nitrides 12a. vinyl group
B. Non-biodegradeable 1. Organic a. Suspended solids b. Dissolved solids c. Other	B. Non-biodegradeable 1a. Organic a. hydrocarbons b. ethers c. polyoxy structures d. ketone e. alkyl benzene sulphonates f. synthetic pesticides lignion g. cellulose h. peat i. coal
2. Inorganic a. Suspended solids b. Dissolved solids c. Other	2a. Inorganic a. acids b. alkalis c. toxic inorganic compounds d. soluable salts e. inert insoluable materials f. agricultural fertilizers g. synthetic pesticides
C. Radionuclides	C. Radionuclides
D. Thermal (in BTU's)	D. Thermal (in BTU's)

III. Landborne Materials

A. Paper	A. Water
B. Garbage	B. Carbon
C. Grass and Dirt	C. Hydrogen

D. Textiles
E. Wood
F. Metallics
G. Glass, stones
H. Ashes
I. Radionuclides

D. Oxygen
E. Nitrogen
F. Sulfur
G. Glass ceramics
H. Metals
I. Radionuclides

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ATTACHMENT A
TO APPENDIX I

A Proposed Externalities Classification System for Use in Planning Models

by

Henry W. Herzog, Jr.

The purpose of this paper is to develop a classification system for the externalities presently being quantified by members of the Environmental Management Project, Bureau of Business and Economic Research, University of Maryland. The following considerations are basic to any choice as to how this "classification system" should be structured:

(1) Simplicity: the system should be as simple as the following considerations allow.

(2) Consistency: the system should be completely consistent with the structure of organization posed by the input-output table and, if possible, with the "materials balance" concept so often mentioned in the environmental management literature.*

(3) The "externality classification system" finally developed should take into consideration the coefficients already developed in the project. These should provide an excellent idea of what information is available in this area and what might be expected from government sources in the future. (Table 1 below outlines the dimensions of the coefficients already developed.)

(4) The system should follow a scientifically logical pattern of organization, preferably one that is already in use.

(5) The classification system should permit the retention of detail while, at the same time, allowing for meaningful aggregation of externalities of the same dimension.

---

*For example, see "Production, Consumption, and Externalities", by Robert Ayres and Allen Kneese, which appeared in the American Economic Review in June, 1969 (pp.282-297).

(6) The system should answer the following three basic questions:

- (a) *What* is being discharged, waste-water, dissolved solids, heat, etc.?
- (b) *Where* is it discharged, to the air, water, or ground?
- (c) and *how much* is discharged?

For the majority of the industry studies completed, information on unit-product emissions is primarily confined to the following three categories:*

- (a) waste-water (flow)
- (b) BOD
- (c) suspended solids

Several industry studies furnish coefficients on dissolved chemical pollution while one, SIC 3312, blast furnaces and steel mills, explicitly defines this waste by breaking out the dissolved waste among 13 chemical compounds.

Two industry studies offer thermal coefficients, electric power and blast furnaces and steel mills. Air emission information is only available for two industries also, petroleum refining and blast furnaces and steel mills. However, information is available on air emissions from coal fired power plants (an industry already under study) and on the emissions from several other industrial processes and subprocesses.**

---

*Table I provides an alternative source to the primary source of water pollution emission data used in the industry studies, viz. the FWPCA studies. Table 1, compiled by Resources for the Future, defines liquid wastes in terms of a single indicator, BOD.

****** *Emissions From Coal-Fired Power Plants*, PHS No. 999-AP-35; *Atmospheric Emissions From The Manufacture of Portland Cement*, PHS No. 999-AP-17; *Air Pollution in the Coffee Roasting Industry*, PHS No. 999-AP-9; *Atmospheric Emissions from Thermal-Process Phospheric Acid Manufacture*, NAPCA No. AP-48; *Atmospheric Emissions from Sulfuric Acid Manufacturing Processes*, PHS No. 999-AP-13; *Atmospheric Emissions from Nitric Acid Manufacturing Processes*, PHS No. 999-AP-27.

Agriculture, new being researched by Robert Korbach, will display the following wastes:

(a) alkalinity

(b) pesticides

(c) plant food

(d) animal waste (organic)

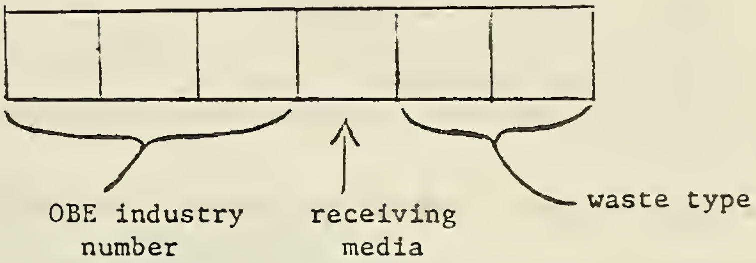
(e) plant residuals

(f) silt

The diversity of waste coefficients already developed provides a background against which a proposed classification system may be evaluated.

The Proposed System:

In general, the system consists of a numbering system which, when added to the OBE industry classification numbers, will identify wastes by origin, type, and receiving media. For instance, consider the following example:



A number such as 015201 would identify a waste generated by the petroleum and natural gas industry (OBE # 15). Specifically, if the receiving media "water" is designated "2" and "1" represents the waste classification "flow", then 015201 explicitly defines waste-water flow from the petroleum and natural gas industry. Following this number would be the actual amount of waste generated. The schedule below suggests one possible assignment scheme:

Uses OBE industry
classification
1-168

1 = air
2 = water
3 = ground

01 = flow
02 = BOD
03 = suspended solids
04 = dissolved solids
05 = thermal
06 = radiological
07 = sonic
o o
o o
o o
etc.
21 - 99 = chemical compounds

Many of the waste types in columns 5 and 6 are particular to one receiving medium only (column 4); for example, flow and BOD are specific to water. Others however, such as "chemical compounds", may be discharged to any one of the three receiving media. It is this latter case where a classification system such as that outlined above would be most useful.

The proposed system satisfies most of the points considered at the outset to be desirable for an externality classification system. One additional advantage of a numerical system of waste classification is that it lends itself well to computer applications. Given a vector of forecasted total output, the machine might perform the algebraic operations necessary to generate an externality profile at a pre-selected level of aggregation. The format for the output might be structured as follows (example: OBE No. 15):

INDUSTRY NO: 015: PETROLEUM REFINING

PROJECTION BASIS: 1975

ECS No:	Coefficients: value:	Coefficients: physical:	Total Output: value:	Total Output: physical:	Total Waste:	Dimension:
015192	X	X	X	X	X	10^6 lbs.
015201	X	X	X	X	X	10^6 gals.
015202	X	X	X	X	X	10^6 lbs.
015231	X	X	X	X	X	10^6 lbs.
015242	X	X	X	X	X	10^6 lbs.

Table 1

PROPOSED WATER POLLUTION CLASSIFICATION (WPC) CODE

WPC Code	Water related item	Dimensions
1000	Water intake, total [a]	1000 Gal./$
1001	Sanitary use	do
1002	Production use	do
1003	Cooling	do
1004	Boiler feed	do
1008	Irrigation	do
1009	Other, n.e.c.	do
1010	Water discharge, total	do
1011	Sanitary use	do
1012	Production	do
1013	Cooling	do
1019	Other, n.e.c.	do
1020	Water consumed	do
1031	Biochemical oxygen demand, BOD, 5-day,	1000 lb./$
1032	Ultimate oxygen demand, UOD	do
1033	Chemical oxygen demand, COD	do
1040	Solids, total [b]	do
1041	Suspended solids	do
1042	Settleable solids	do
1047	Turbidity	do
1048	Color	do [c]
1051	Alkalinity	do
1052	Acidity	do
1061	Oils and greases	do
1062	Surfactants	do
1070	Pathogenic (disease causing) organisms	-- [d]
1080	Temperature	-- [d]
1090	Other pollutants	do
1095	Toxic materials [e]	do
1096	Radioactive waste	-- [d]
1099	Not classified	do

---

[a] Cost of water intake is given by SIC code 4941--water supply.

[b] 1040 = 1041 + 1042.

[c] In addition, color should be specified by kind by its wave length.

[d] No one satisfactory measure was decided upon at this time, although thermal pollution may be specified most satisfactory in terms of millions of BTU's per dollar output.

Table 1, continued

[e] Phenols, for example, can be classified in this category by a 5-digit code as P OW 10951.

n.e.c. stands for not elsewhere classified.

The classification is based on 4-digit numbers where the first three digits describe the major group of pollutants and the fourth digit lists the detailed components of the three digit group. A five digit or more classification can also be developed as can be seen further in the text.

Thus, water discharged was assigned the code number of 1010. The components of water discharged were assigned the codes 1011-Sanitary use, 1012-Production use, etc. The classification code as development for this study is shown in Table IV.

ATTACHMENT B
TO APPENDIX I

Notes on an Environmental Classification System

by

Bruce N. Stram

The following paper proposes a system for classification of environmental pollutants and externalities. It is derived from a system proposed by Henry Herzog of the Environmental Management Project at the Bureau of Business and Economic Research, which was in turn based on an SIC framework.

In designing the proposed classification system particular attention was paid to the need for the system: (1) to describe simply and accurately any desired level of aggregation of the data; (2) to remain useful with only minimal data; (3) to express pollutant quantities in both volume and weight measures; and (4) to easily and accurately allow summation of the data.

THE PROPOSED SYSTEM

The classification system consists of a potential eight digit identity divided into three sections. The first three digits are industrial classification numbers which are used to describe the source of any pollutants or externalities. The second section consists of a letter describing the receiving medium. "A" indicates that the receiving medium is the atmosphere, "B" water, and "C" land. The third section is a four digit classification of pollutants. The use of the letter in the second section clearly delineates between the industrial classification numbers to the left and the externality classification numbers to the right.

The waste classification system is further disaggregated by its digits:

(1) indicates general physical characteristics of the pollutant;

(2) indicates general chemical characteristics of the pollutant;

and (3) - (4) indicate specific chemical nature of the pollutant.

0000 - summation of all externalities

0100 - summation of all BOD pollutants

0101

.

. - summation of each BOD chemical

.

0199

0200 - summation of organic but non-BOD pollutants

0201

.

. - summation for each organic but non BOD chemical

.

0299

0300 - summation of all inorganic pollutants

0301

.

. - summation for each inorganic chemical

.

0399

.

.

.

1000 - indicates suspended solids

1100 - indicates BOD suspended solids

1101

.

.

. - indicates the separate BOD active chemicals

1200 - as above but indicating non-BOD active organic suspended solids

.

.

.

1300 - indicates suspended inorganic compounds
.
.
.

2000 - indicates dissolved materials
.
.
.

3000 - indicates thermal waste
.
.
.

4000 - indicates radiological waste
.
.
.

5000 - indicates sonic waste

It should be clear that the proposed system substantially satisfies the first and last needs listed in the introduction. Any pollutant or externality can be described in such detail as to indicate its chemical structure. Any desired level of aggregation or summation of the data is also accurately described by the system. For example:

(a) 015B0 or 015B0000 indicates total water wastes by weight for industry 015.

(b) 015B1 or 015B1000 indicates total water suspended solids emitted by industry 015.

(c) B1 or B1000 indicates total water suspended solids summed over all industries.

(d) B0 or B0000 indicates total water borne wastes summed over all industries.

(e) 015B03 or 015B0300 indicates summation of all inorganic pollutants for industry 015.

Presuming that the units of measurement are commensurate, summation may proceed easily because all the specified categories are exclusive and no double counting intrudes.

The quantity of pollution emissions indicated by volume, rather than by weight of the actual pollutant chemicals, is to be specified by the industry and receiving medium classification digits. For example the symbol "015B" would indicate the total wastewater volume for industry 015.

With regard to atmospheric and aquatic pollution, data describing the volume of emissions are important in and of themselves. In addition, data in this form are the most frequently available and are in some cases the only available. Thus specification of wasteloads by volume allows for a certain flexibility in handling situations where only minimal data are available. If industry 015 has only wastewater volume data available, this data can be indicated without intruding on the summation of wastes by weight for those industries which provide the necessary data.

SUMMATION OF WASTE DATA

Summation of effluent quantities over various industrial categories is at once both desirable and conceptually difficult. A most obvious method is to simply sum the weights of the various material added to the receiving medium, or to sum the volume of emissions. A slight refinement of this approach would involve normalizing the weights of the various chemical compounds which constitute the wastes by their respective molecular weights before adding.

The deficiencies of the method are quite clear: the differing chemical effects and activities of the various substances are ignored and certain categories of pollutans, i.e. thermal, sonic, etc., are not included at all.

In order to devise a weighting system which reflects these differing effects and levels of activity, one must specify what chemical and/or biological effects are to be considered relevant. The various chemicals constituting the pollutants could be given weights relative to some standard criterion. For example one might choose to weigh the chemicals by their relative effect on the oxygen level in water.

However, substantial conceptual difficulties still remain with respect to this approach. In order for the summation of the normalized weights of pollutants to reflect a proper summation of total effects, the relation between each pollutant effect and its level of concentration must be linear over the range of concentration likely to be encountered. It must be further noted that the effect of many pollutants will vary as to water temperature, turbidity, etc. Will the relative impact of the pollutants remain sufficiently stable over probable variations of these parameters?

The above considerations naturally suggest the possibility of interdependent effects among the various pollutants. Thermal pollution, for example, would certainly alter the effects of the chemical effluents. A hopelessly detailed specification of the data would be necessary to account for such effects.

APPENDIX II

A 1966 Interindustry Model of Maryland

Table C.1: Major Components of Regional Supply and Demand, 1966

Table C.2: Interindustry Transactions, 1966

Tables C.3 through C.8 omitted

Source: An Interindustry Study of the State of Maryland, Regional-Urban Studies, Inc., 7008 Wells Parkway, Hyattsville, Maryland, 20782, 1971.

AN INTERINDUSTRY STUDY OF THE STATE OF MARYLAND

PART C: COMPUTER GENERATED TABLES

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MAJOR COMPONENTS OF REGIONAL SUPPLY AND DEMAND, 1966* (MILLIONS OF DOLLARS)
STATE OF MARYLAND

	REGIONAL OUTPUT (1)	FOREIGN IMPORTS (2)	REG SUPPLY (3)	INTER-MEDIATE DEMAND (4)	CON-SUMER EXPEND (5)	STATE LOCAL GOVT (6)	FEDERAL DEFENSE EXPEND (7)	FEDERAL CIV GOVT (8)	CAPITAL FORMA-TION (9)	FOREIGN EXPORTS (10)	REG DEMAND (11)	NET REGIONAL EXPORTS (12)
1 LIVESTOCK	363	1	364	304	42	0	0	0	0	1	347	17
2 CROPS	302	4	306	184	64	2	0	-0	5	65	319	-13
3 FORESTRY & FISHERY PRODUCTS	4	4	7	8	4	0	0	0	0	0	12	-5
4 AGRICULTURAL SERVICES	40	0	40	23	0	-1	0	0	1	0	23	17
5 IRON ORE MINING	0	128	128	33	0	0	0	0	0	45	78	50
6 NON-FERROUS ORE MINING	3	2	5	26	0	0	1	0	0	3	29	-25
7 COAL MINING	5	0	5	30	5	0	0	0	0	22	58	-53
8 PETROLEUM MINING	0	8	8	51	0	0	0	0	0	0	51	-43
9 MINERALS MINING	77	8	86	39	0	-1	0	0	43	1	83	3
10 CHEMICAL MINING	0	6	6	7	0	1	0	0	0	0	7	-1
11 NEW CONSTRUCTION	596	0	596	0	0	0	0	0	596	0	596	0
12 MAINTENANCE CONSTRUCTION	512	0	512	404	0	75	15	19	0	0	512	0
13 ORDNANCE	35	15	50	2	4	0	7	102	0	2	118	-68
14 MEAT PACKING	242	0	242	31	439	3	0	1	0	2	476	-234
15 DAIRY PRODUCTS	120	0	120	21	211	3	0	7	0	1	243	-123
16 CANNED & FROZEN FOODS	95	0	95	18	144	1	0	0	0	1	164	-69
17 GRAIN MILL PRODUCTS	49	4	52	70	49	0	0	2	0	19	141	-89
18 BAKERY PRODUCTS	73	0	73	5	129	1	0	0	0	0	135	-62
19 SUGAR	39	32	71	27	18	0	0	0	0	0	45	26
20 CANDY	8	3	11	3	45	0	0	0	0	0	48	-37
21 BEVERAGES	259	0	259	53	204	0	0	0	0	1	258	1
22 MISC FOOD PRODUCTS	112	0	112	39	109	1	0	2	1	1	152	-40
23 TOBACCO	0	0	0	4	117	0	0	0	0	0	121	-120
24 FABRICS & YARN	60	6	66	140	22	0	0	1	0	2	166	-100
25 RUGS, TIRE CORD, MISC TEXTILES	0	5	5	16	26	0	0	0	12	1	55	-50
26 APPAREL	282	1	282	47	353	2	0	1	0	3	406	-123
27 HOUSEHOLD TEXTILES & UPHOLST	40	0	40	15	34	0	2	0	1	1	53	-13
28 LUMBER & PROD EXC CONTAINERS	58	11	69	65	5	0	0	0	109	2	182	-113
29 WOODEN CONTAINERS	10	0	10	6	0	0	1	0	0	0	7	3
30 HOUSEHOLD FURNITURE	32	0	32	6	66	0	1	0	21	0	94	-62
31 OFFICE FURNITURE	25	0	25	0	4	4	0	1	27	0	36	-11
32 PAPER & PROD EXC CONTAINERS	114	4	118	175	19	1	0	1	6	2	205	-87
33 PAPER CONTAINERS	100	0	100	64	1	1	0	0	0	0	67	32
34 PRINTING & PUBLISHING	285	0	285	245	72	9	2	-1	0	1	327	-43
35 BASIC CHEMICALS	116	26	142	158	4	5	12	3	3	10	195	-53
36 PLASTICS & SYNTHETICS	57	4	61	68	0	0	0	0	0	15	84	-23
37 DRUGS, CLEANING & TOILET ITEMS	112	1	113	56	106	8	5	2	0	3	180	-66
38 PAINT & ALLIED PRODUCTS	38	0	38	21	0	0	1	0	26	1	49	-11
39 PETROLEUM REFINING	35	27	62	127	179	7	2	3	16	1	334	-272
40 RUBBER & PLASTIC PRODUCTS	200	2	202	90	26	2	4	1	19	1	143	58
41 LEATHER TANNING	2	1	4	6	0	0	0	0	0	0	7	-3
42 SHOES & OTHER LEATHER PRODUCTS	23	0	23	3	62	0	1	0	0	0	66	-43
43 GLASS & GLASS PRODUCTS	89	3	92	35	2	1	0	0	10	1	49	42
44 STONE & CLAY PRODUCTS	233	5	238	36	4	0	9	0	146	5	200	38
45 IRON & STEEL	605	9	614	337	1	0	3	0	22	16	378	236
46 COPPER	121	67	188	88	0	0	3	0	14	24	130	58
47 ALUMINUM	49	8	57	60	0	0	0	0	4	2	67	-9
48 OTHER NON-FERROUS METALS	75	37	113	52	0	0	1	2	63	3	120	-8
49 METAL CONTAINERS	176	0	176	39	0	0	2	0	1	0	42	134
50 HEATING, PLUMBING, STRUC METAL	143	0	143	16	2	0	6	1	147	29	200	-57
51 STAMPINGS, SCREW MACHINE PROD	45	2	47	50	8	0	1	1	6	10	76	-28
52 HARDWARE, PLATING, WIRE PROD	56	9	65	64	6	0	1	0	36	13	121	-56

TABLE C.1: MAJOR COMPONENTS OF REGIONAL SUPPLY AND DEMAND, 1966* (MILLIONS OF DOLLARS)
STATE OF MARYLAND

	REGIONAL OUTPUT (1)	FOREIGN IMPORTS (2)	REG SUPPLY (3)	INTER-MEDIATE DEMAND (4)	CON-SUMER EXPEND (5)	STATE LOCAL GOVT (6)	FEDERAL DEFENSE EXPEND (7)	FEDERAL CIV GOVT (8)	CAPITAL FORMA-TION (9)	FOREIGN EXPORTS (10)	REG DEMAND (11)	NET REGIONAL EXPORTS (12)
53 ENGINES & TURBINES	0	1	1	12	3	0	0	2	9	4	31	-29
54 FARM MACHINERY & EQUIPMENT	0	1	1	4	0	0	0	0	17	4	26	-26
55 CONSTRUCTION & MINING MACHINES	8	1	9	4	0	1	0	0	22	19	46	-37
56 MATERIAL HANDLING EQUIPMENT	5	0	6	3	0	0	0	0	30	2	36	-30
57 METALWORKING MACHINERY & EQUIP	81	2	83	33	1	1	2	1	32	7	76	7
58 SPECIAL INDUSTRIAL MACHINERY	70	4	74	8	1	0	1	0	28	11	48	26
59 GENERAL INDUSTRIAL MACHINERY	31	3	34	31	0	0	2	1	24	7	65	-31
60 MACHINE SHOPS & MISC MACHINERY	37	0	37	29	0	1	1	0	1	0	33	5
61 OFFICE & COMPUTING MACHINES	21	3	23	26	1	2	1	9	18	8	65	-42
62 SERVICE INDUSTRY MACHINES	49	0	49	5	6	2	1	0	43	5	63	-14
63 ELECTRIC APPARATUS & MOTORS	24	3	27	36	0	1	1	4	53	9	105	-78
64 HOUSEHOLD APPLIANCES	2	0	2	7	58	0	0	0	15	3	83	-81
65 ELECTRIC LIGHT & WIRING EQUIP	3	1	4	5	7	1	0	0	46	3	63	-59
66 COMMUNICATION EQUIPMENT	501	6	507	45	52	2	250	54	39	7	448	59
67 ELECTRONIC COMPONENTS	31	2	33	163	6	0	4	4	3	5	185	-152
68 BATTERIES & ENGINE ELEC EQUIP	18	2	19	16	4	0	2	1	8	3	34	-15
69 MOTOR VEHICLES	252	146	398	136	361	14	7	2	68	33	623	-225
70 AIRCRAFT & PARTS	182	6	188	43	0	0	68	75	27	7	220	-32
71 SHIPS, TRAINS, TRAILRS, CYCLES	180	18	198	40	24	1	22	5	27	3	122	75
72 INSTRUMENTS & CLOCKS	34	1	36	14	12	2	21	4	22	1	76	-41
73 OPTICAL & PHOTOGRAPHIC EQUIP	5	2	6	17	19	2	2	3	6	1	49	-43
74 MISC MANUFACTURED PRODUCTS	55	7	62	29	76	2	0	0	9	2	119	-57
75 TRANSPORTATION	848	7	855	442	254	13	46	61	27	117	960	-105
76 COMMUNICATION	302	0	302	113	129	7	10	2	21	0	282	20
77 RADIO, TV BROADCASTING	32	0	32	49	0	0	0	0	0	0	49	-17
78 ELECTRIC UTILITY	323	0	323	136	130	18	10	-3	3	0	293	30
79 GAS UTILITY	123	0	123	49	68	3	2	1	1	0	123	0
80 WATER UTILITY	18	0	18	9	13	-1	0	0	2	0	24	-5
81 WHOLESALE & RETAIL TRADE	2734	0	2734	442	1843	2	35	7	321	35	2683	51
82 FINANCE & INSURANCE	638	0	638	320	334	6	1	1	4	0	666	-28
83 REAL ESTATE & RENTAL	2957	0	2957	582	1889	9	10	7	1	0	2499	458
84 HOTELS, PERSONAL & REPAIR SVC	301	0	301	73	224	3	4	4	0	0	308	-7
85 BUSINESS SERVICES	942	0	942	674	68	19	19	19	21	0	820	122
86 AUTOMOBILE REPAIR SERVICES	287	0	287	124	118	2	1	1	12	0	257	29
87 AMUSEMENTS & RECREATION	198	0	198	70	114	-1	1	0	0	0	184	14
88 MEDICAL & EDUCATIONAL INSTIT	798	0	798	100	649	15	24	22	2	0	812	-14
89 BUSINESS TRAVEL, ENTERTAINMENT	149	0	149	142	0	0	0	1	6	0	149	0
90 OFFICE SUPPLIES	42	0	42	31	0	7	0	3	0	0	42	0
91 'GOVERNMENT INDUSTRY'	1679	0	1679	0	0	811	423	444	0	0	1679	0
92 'DOMESTIC SERVICE INDUSTRY'	148	0	148	0	148	0	0	0	0	0	148	0
DIRECTLY ALLOCATED IMPORTS	0	86	86	25	65	0	0	30	0	0	119	-33
STATE OF MARYLAND	20221	748	20969	7554	9262	1076	1055	912	2306	605	22769	-1798

* (3) EQUALS COLUMN 1 PLUS COLUMN 2. (11) EQUALS THE SUM OF COLUMNS 4 THRU 10. (12) IS COLUMN 3 MINUS COLUMN 11; A NEGATIVE VALUE IN (12) INDICATES NET IMPORTS INTO REGION. DETAIL MAY NOT ADD DUE TO ROUNDING TO MILLIONS.

TABLE C.2: INTERINDUSTRY TRANSACTIONS, 1966 (THOUSANDS OF DOLLARS)

STATE OF MARYLAND

THE INTERINDUSTRY TRANSACTIONS TABLE WOULD, IF DISPLAYED IN MATRIX FORM (AS IN THE HYPOTHETICAL EXAMPLE, TABLE A.1), HAVE UP TO 95 ROWS AND 102 COLUMNS. SINCE A MATRIX THIS SIZE WOULD BE AWKWARD TO USE, TABLE C.2 IS PRESENTED IN A MORE EASILY READABLE FORM. FOR EACH INDUSTRY SECTOR BOTH ITS OUTPUT (ROWS) DISTRIBUTION AND ITS INPUT (COLUMNS) COMPOSITION ARE DISPLAYED TOGETHER, AND ALL ZERO ENTRIES HAVE BEEN ELIMINATED. TURNING TO THE FIRST PAGE OF THE TABLE, THE READER WILL SEE THE OUTPUT (SALES) OF INDUSTRY SECTOR NO. 1, LIVESTOCK , IDENTIFIED BY THE COLUMN NUMBER OF THE PURCHASING SECTOR; AND RIGHT BELOW THE SALES DISPLAY THE INPUTS OF SECTOR NO. I ARE IDENTIFIED BY THE ROW NUMBER OF THE SUPPLYING SECTOR.

WITH THIS TYPE OF DISPLAY ALL NUMBERS IN THE TRANSACTION MATRIX ARE RECORDED TWICE. FOR EXAMPLE, THERE WERE $18,584 OF SALES FROM SECTOR NO. I TO SECTOR NO. 2, CROPS , AS NOTED IN THE OUTPUT DISTRIBUTION OF ROW 1; AND THE INPUT COMPOSITION OF COLUMN 2 SHOWS THE SAME $18,584 AS BEING PURCHASED FROM SECTOR NO. 1.

AT THIS POINT THE READER SHOULD FOLD OUT TABLE C.8 WHICH SHOWS THE SECTOR NUMBERS AND THEIR NAMES. THIS TABLE WILL MAKE IT EASIER TO IDENTIFY EACH FIGURE IN TABLES C.2 THROUGH C.5.

THE GROSS PRODUCT FOR THE STATE OF MARYLAND WAS $12667480 IN 1966. THIS IS EQUIVALENT TO THE SUM OF VALUE ADDED (SECTOR 95), AND TO THE SUM OF THE FINAL DEMAND SECTORS AS FOLLOWS:

96	PERSONAL CONSUMPTION EXPEND	$9,261,532
97	STATE AND LOCAL GOVERNMENT	$1,075,580
98	FEDERAL CIVILIAN GOVERNMENT	$911,887
99	FEDERAL DEFENSE EXPENDITURE	$1,055,276
100	CAPITAL FORMATION	$2,305,686
101	NET FOREIGN EXPORTS	$-143,036
102	NET REGIONAL EXPORTS	$-1,799,438
TOTAL		$12,667,480

THERE ARE TWO TRANSACTIONS THAT ARE HARD TO INTERPRET. ONE IS THE ENTRY FOR REGIONAL IMPORTS(NO. 94) AND FOREIGN EXPORTS(NO. 101), WHICH RECORDS THE NET FLOW OF GOODS FROM OTHER REGIONS IN THE UNITED STATES BEING EXPORTED TO FOREIGN COUNTRIES THROUGH EXIT POINTS IN THE STATE OF MARYLAND . THE OTHER ENTRY IS REGIONAL EXPORTS (NO. 102) AND FOREIGN IMPORTS (NO. 93), WHICH RECORDS THE NET FLOW OF FOREIGN GOODS COMING INTO THE UNITED STATES THROUGH ENTRY POINTS IN THE STATE OF MARYLAND BUT BEING SHIPPED TO OTHER REGIONS OF THE COUNTRY.

TABLE C.2: INTERINDUSTRY TRANSACTIONS, 1966 (THOUSANDS OF DOLLARS)

STATE OF MARYLAND

SOME EXAMPLES IN READING THE TABLE FOLLOW:

THE GROSS OUTPUT OF THE LIVESTOCK SECTOR (NO. 1) FOR THE STATE OF MARYLAND WAS $362,995. OF THE TOTAL SALES ASSOCIATED WITH THIS SECTOR, $72,076 WERE INTRASECTOR SALES AND $46,368 WERE TO THE DAIRY PRODUCTS SECTOR (NO. 15). THE LARGEST SALES BY THE LIVESTOCK SECTOR ($ 159,956) WERE TO THE MEAT PACKING SECTOR (NO. 14).

TO MAKE THE SALES ABOVE, THE LIVESTOCK SECTOR HAD PURCHASES OF $101,343 IN FEED INPUTS (FORAGE AND GRAIN) FROM THE CROPS SECTOR (NO. 2), AND $15,595 IN INPUTS FROM THE GRAIN MILL PRODUCTS SECTOR (NO. 17). VALUE ADDED (NO. 95), CONSISTING OF WAGES AND SALARIES, PAYMENTS TO FARM OPERATORS, BUSINESS TAXES, AND CAPITAL CONSUMPTION, WAS $63,904.

USING THE SUGAR INDUSTRY (NO. 19) AS A FURTHER EXAMPLE, AND READING ACROSS THE ROW, TABLE C.2 SHOWS SALES OF $370 TO THE DAIRY PRODUCTS SECTOR (NO. 15), AND $570 TO SECTOR NO. 16, CANNED & FROZEN FOODS . THE LARGEST TRANSACTION IS SALES OF $17,612 TO THE PERSONAL CONSUMPTION EXPEND SECTOR (NO. 96). NOTE THAT THE OUTPUT OF SECTOR NO. 19 WAS SUFFICIENT TO SATISFY THE REGIONAL REQUIREMENTS, RESULTING IN NET REGIONAL EXPORTS OF $10,223.

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TABLE C.2:                   INTERINDUSTRY TRANSACTIONS, 1966 (THOUSANDS OF DOLLARS)                                PAGE:  44
                                              STATE OF MARYLAND

 . . . . . . . . . . . . . .   SECTOR    1. LIVESTOCK                           TOTAL OUTPUT:    362995. . . . . . . . . . . . . . . .

DISTRIBUTION OF OUTPUT, ROW    1
  COL. AMOUNT    COL. AMOUNT   COL. AMOUNT    COL. AMOUNT    COL. AMOUNT    COL. AMOUNT    COL. AMOUNT    COL. AMOUNT    COL. AMOUNT
    1   72076      2   18584     4     4905    14  159956    15   46366    22     809    24     129    37      23    75      27
   87     319     88      88    89      537    96   42227    97     225    96      13    99       5   102   16705

COMPOSITION OF INPUT, COLUMN   1
  ROW  AMOUNT    ROW  AMOUNT   ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT
    1   72076      2  101343     4     7006     7       6     9      21    12    3971    17   15595    19      57    22    4548
   27     213     28       7    32       92    34      84    35     687    37    1308    40     500    42      23    43      46
   44      12     48       3    49      104    51     226    52     104    60      48    61       3    68      48    71       3
   74       9     75   10023    76      806    78    1236    79      63    80       4    81   14199    82    2381    83    5338
   85    3305     86    2242    88    10708    89     153    93     779    94   39712    95   63904

 . . . . . . . . . . . . . .   SECTOR    2. CROPS                               TOTAL OUTPUT:    301617. . . . . . . . . . . . . . . .

DISTRIBUTION OF OUTPUT, ROW    2
  COL. AMOUNT    COL. AMOUNT   COL. AMOUNT    COL. AMOUNT    COL. AMOUNT    COL. AMOUNT    COL. AMOUNT    COL. AMOUNT    COL. AMOUNT
    1  101343      2    7891    12        7    15     363    16   10280    17   11331    18     476    19    7640    20     235
   21    4841     22   24880    24     3617    35     100    37      74    44     192    72      33    74      79    75     133
   83     841     88     629    89     1512    96   61458    97    1648    98    -691    99      43   100    4427   101   58237

COMPOSITION OF INPUT, COLUMN   2
  ROW  AMOUNT    ROW  AMOUNT   ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT
    1   18584      2    7891     4    11528     7       1     9     956    12    5263    22      26    24      36    27     463
   28       5     29    1131    32        7    33      35    34     113    35   11537    40    1488    44     340    48       3
   49     155     52     139    60       85    61       2    68     161    71     113    74       8    75    3800    76    1011
   78     807     79      33    80      396    81   11428    82    3635    83   26626    85   14630    86    3643    88     520
   89     292     90      18    93     6372    94   19260    95  149073

 . . . . . . . . . . . . . .   SECTOR    3. FORESTRY & FISHERY PRODUCTS         TOTAL OUTPUT:      3638. . . . . . . . . . . . . . . .

DISTRIBUTION OF OUTPUT, ROW    3
  COL. AMOUNT    COL. AMOUNT   COL. AMOUNT    COL. AMOUNT    COL. AMOUNT    COL. AMOUNT    COL. AMOUNT    COL. AMOUNT    COL. AMOUNT
    3       9     16     323    17        1    22      27    26     152    28     535    35      18    37       1    74       3
   89      50     96    2485    97       35

COMPOSITION OF INPUT, COLUMN   3
  ROW  AMOUNT    ROW  AMOUNT   ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT
    3       9      4     256    22       59    27       3    32       1    34       1    35       3    38       5    40       4
   44       1     49      67    52       17    59       1    60       1    61       1    65       1    68       3    71     114
   75      34     78       1    81      174    82       4    85      89    86      48    89       4    90       2    93      76
   94    -309     95    2353

 . . . . . . . . . . . . . .   SECTOR    4. AGRICULTURAL SERVICES               TOTAL OUTPUT:     39804. . . . . . . . . . . . . . . .

DISTRIBUTION OF OUTPUT, ROW    4
  COL. AMOUNT    COL. AMOUNT   COL. AMOUNT    COL. AMOUNT    COL. AMOUNT    COL. AMOUNT    COL. AMOUNT    COL. AMOUNT    COL. AMOUNT
    1    7006      2   11528     3      256    81    3607    83     331    86       2    97    -615    98       2    99      91
  100     735    102   16861
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TABLE C.2:                    INTERINDUSTRY TRANSACTIONS, 1966 (THOUSANDS OF DOLLARS)                           PAGE:  45
                                           STATE OF MARYLAND


COMPOSITION OF INPUT, COLUMN    4
  ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT
    1    4905     17     299     29     321     32       1     33    2129     34       1     35      24     40       3     42      13
   52    1415     60       1     61       6     70       2     75    1295     78      27     81    1325     82     230     83    1847
   85     796     86      63     89      42     90       4     93      85     94    2957     95   22012

. . . . . . . . . . . . . .   SECTOR    5. IRON ORE MINING                TOTAL OUTPUT:         0. . . . . . . . . . . . . . . . . .

. . . . . . . . . . . . . .   SECTOR    6. NON-FERROUS ORE MINING         TOTAL OUTPUT:      3007. . . . . . . . . . . . . . . . . .

DISTRIBUTION OF OUTPUT, ROW     6
  COL. AMOUNT   COL. AMOUNT    COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT
    6      67     35      81     44       1     45       5     46    1651     47     191     48     395     98      14     99     500
  101     101

COMPOSITION OF INPUT, COLUMN    6
  ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT
    6      67     12      22     28       4     32       1     35      65     40      22     44       2     45      54     50       1
   52       3     55       7     56       1     57       1     59       1     60      78     61       1     71       8     74       1
   75      47     76       4     78      68     79       4     80       2     81      42     82      60     83     105     85      49
   86       9     88       8     89      15     90       1     93      22     94     805     95    1426

. . . . . . . . . . . . . .   SECTOR    7. COAL MINING                    TOTAL OUTPUT:      5314. . . . . . . . . . . . . . . . . .

DISTRIBUTION OF OUTPUT, ROW     7
  COL. AMOUNT   COL. AMOUNT    COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT
    1       6      2       1      7      72      9       7     13       1     14       4     15       8     16       4     17       3
   18       1     19       9     21      10     22       8     24       6     26       2     28       1     30       1     31       1
   32      61     33       1     34       1     35      45     36      21     37       2     40      14     43       6     44     175
   45    1043     46       3     47       1     48       1     49       2     50       2     52       1     57       1     58       1
   59       1     62       1     63       1     66       4     69       6     70       1     71       5     73       1     74       1
   75       8     78    1198     79       4     80       2     84       1     88      17     96     436     97      30     98      16
  101    2052

COMPOSITION OF INPUT, COLUMN    7
  ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT
    7      72     12      42     28       7     32       1     35      52     40      81     44       6     45      85     52      11
   55      21     57      10     59       2     60      28     61       1     63       4     68       1     71      42     75     118
   76       9     78     145     80       1     81     116     82      74     83     207     85     114     86      35     88      18
   89      19     90       1     93      44     94    1054     95    2892

. . . . . . . . . . . . . .   SECTOR    8. PETROLEUM MINING               TOTAL OUTPUT:         0. . . . . . . . . . . . . . . . . .

. . . . . . . . . . . . . .   SECTOR    9. MINERALS MINING                TOTAL OUTPUT:     77441. . . . . . . . . . . . . . . . . .

DISTRIBUTION OF OUTPUT, ROW     9
  COL. AMOUNT   COL. AMOUNT    COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT
    1      21      2     956      9     368     12    6867     17      42     22       4     24       2     32     535     33       6
   35     252     37      30     38      84     39     115     40     153     43     946     44   19457     45    2080     46     278
   47      46     48      24     50       9     52      17     58       1     59       1     63       1     67       3     68       1
   69       9     72       2     74       8     83      26     84      22     96     285     97    -645     98    -195     99     413
  100   43024    102    2195
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TABLE C.2:                    INTERINDUSTRY TRANSACTIONS, 1966 (THOUSANDS OF DOLLARS)                     PAGE:  46
                                           STATE OF MARYLAND

COMPOSITION OF INPUT, COLUMN   9
  ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT
    7       7      9     368     12     630     32      94     34       4     35     895     40    3208     44      86     45    1139
   46      37     47       1     48      16     50      34     52      76     55     219     56      64     59     483     60     386
   61      11     63      64     65       1     68      37     71      10     74       1     75     893     76       8     78    2150
   79     161     80      88     81    2245     82    1510     83    2606     85    1779     86    1792     88      63     89     374
   90      17     93    1145     94    6356     95   48384

. . . . . . . . . . . . . .   SECTOR  10. CHEMICAL MINING               TOTAL OUTPUT:          0. . . . . . . . . . . . . . . .

. . . . . . . . . . . . . .   SECTOR  11. NEW CONSTRUCTION              TOTAL OUTPUT:    596307. . . . . . . . . . . . . . . .

DISTRIBUTION OF OUTPUT, ROW   11
  COL. AMOUNT
  100  596307

COMPOSITION OF INPUT, COLUMN  11
  ROW  AMOUNT
   95  596307

. . . . . . . . . . . . . .   SECTOR  12. MAINTENANCE CONSTRUCTION      TOTAL OUTPUT:    512449. . . . . . . . . . . . . . . .

DISTRIBUTION OF OUTPUT, ROW   12
  COL. AMOUNT    COL. AMOUNT    COL. AMOUNT    COL. AMOUNT    COL. AMOUNT    COL. AMOUNT    COL. AMOUNT    COL. AMOUNT    COL. AMOUNT
    1    3971      2    5263      6      22      7      42      9     630     12     253     13      64     14     472     15     443
   16     394     17     154     18     234     19     107     20      22     21     822     22     378     24     215     26     328
   27      71     28     318     29      25     30      55     31      55     32     576     33     384     34     528     35     858
   36     375     37     352     38     135     39     646     40     821     41       3     42      42     43     455     44    1633
   45    6386     46     286     47     220     48     195     49     323     50     404     51      83     52     126     55      17
   56      14     57     261     58     103     59      77     60     132     61      38     62     138     63      52     64       2
   65       3     66     449     67     116     68      11     69     497     70     432     71     316     72      94     73      12
   74     179     75   27053     76    9646     78   17163     79    5001     80    5207     81    9410     82    1919     83  273700
   84    3142     85     647     86     690     87    1796     88   16035     97   74734     98   18990     99   14838    100     365

COMPOSITION OF INPUT, COLUMN  12
  ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT
    2       7      9    6867     12     253     22      58     26     187     27       3     28    3736     31      20     32    1043
   34      29     35     878     37       1     38    9282     40    4217     43    2453     44    6782     45    8084     46    1207
   47     148     48    1248     50    5620     51     382     52    2736     55     195     56     199     57      13     59     555
   60      29     61      55     62    1108     63     302     64      55     65      71     66     478     67       8     68     160
   71       5     72     324     74     615     75   14744     76    2297     78    1626     79     125     80     140     81   68084
   82    5189     83    4633     85   16634     86    5565     88    2575     89    1060     90      68     93   11062     94   44437
   95  274797

. . . . . . . . . . . . . .   SECTOR  13. ORDNANCE                      TOTAL OUTPUT:     35011. . . . . . . . . . . . . . . .

DISTRIBUTION OF OUTPUT, ROW   13
  COL. AMOUNT    COL. AMOUNT    COL. AMOUNT    COL. AMOUNT    COL. AMOUNT
   96    1032     97      11     98   26454     99    7478    100      36
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COMPOSITION OF INPUT, COLUMN  13
 ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT
   7       1    12      64    26      18    28      19    29      51    32      13    33      77    34      10    35     115
  36       7    37       5    40     368    41       1    45    1081    46     516    47     315    48      72    51      17
  52      75    56       1    57      98    59      40    60      84    61      42    63      76    66    1051    67     380
  68      38    70    2595    72      18    73       2    74       2    75     230    76     371    78     173    79      17
  80       5    81     551    82     267    83     225    84     113    85     846    86     117    88     181    89     782
  90      40    93     989    94    4682    95   18170

 . . . . . . . . . . . . .  SECTOR  14. MEAT PACKING                TOTAL OUTPUT:   241761. . . . . . . . . . . . . . . .

DISTRIBUTION OF OUTPUT, ROW  14
 COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT
  14   11119    16     705    17      31    18     319    20       2    22     251    35      74    37      65    41       1
  72      32    75     299    88     584    89    2407    96  222840    97    1738    98     355   101     939

COMPOSITION OF INPUT, COLUMN  14
 ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT
   1  159956     7       4    12     472    14   11119    15      39    16       4    26     168    29     188    32     711
  33    2383    34    1216    35     123    37      40    40    2304    41       2    49    2862    52      72    56       1
  58      48    59       6    60       6    61      55    68       4    72       5    74       4    75   11140    76     363
  78     791    79     110    80      60    81    4619    82     864    83     660    84    1315    85    3224    86     382
  88     228    89     547    90      46    93     237    94   13760    95   21622

 . . . . . . . . . . . . .  SECTOR  15. DAIRY PRODUCTS              TOTAL OUTPUT:   119507. . . . . . . . . . . . . . . .

DISTRIBUTION OF OUTPUT, ROW  15
 COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT
  14      39    15    7486    16      30    17      86    18     440    20      52    22       4    35       2    75     169
  88     348    89    1457    96  103626    97    1644    98    3569   101     554

COMPOSITION OF INPUT, COLUMN  15
 ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT
   1   46368     2     363     7       8    12     443    15    7486    16      13    17      68    18      49    19     370
  21     704    22      59    24      12    26      26    29     139    32    1194    33    4868    34     628    35      65
  37      21    40     697    41       2    43     208    44       1    45       1    49    1576    51     104    52     101
  56       1    58      50    59       2    60      22    61      24    66      19    72       2    74       3    75    1293
  76     650    78     854    79     118    80      25    81    3264    82    1481    83    1193    84     918    85    3444
  86    1654    88     424    89     520    90      66    93     905    94   10557    95   26443

 . . . . . . . . . . . . .  SECTOR  16. CANNED & FROZEN FOODS       TOTAL OUTPUT:    95299. . . . . . . . . . . . . . . .

DISTRIBUTION OF OUTPUT, ROW  16
 COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT
  14       4    15      13    16    5099    18      80    20      31    21     915    22      34    35       7    75     539
  85    1834    88    1281    89     328    96   83735    97     692    98     120   101     586

COMPOSITION OF INPUT, COLUMN  16
 ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT
   2   10280     3     323     7       4    12     394    14     705    15      30    16    5099    17     225    19     570
  21     872    22    1746    26      55    28       4    29      57    32     994    33    1943    34    1220    35     110
  37     148    40     342    41       2    43    2805    47       8    49    9137    51     730    52     602    56       1
  56      54    59       8    60       2    61      18    68       1    72       4    74       3    75    5999    76     156
  78     442    79     105    80      41    81    4739    82     400    83     618    84     321    85    6874    86     102
  88      93    89     488    90      64    93    2153    94   10154    95   24054
 . . . . . . . . . . . . .  SECTOR  17. GRAIN MILL PRODUCTS              TOTAL OUTPUT:     48801. . . . . . . . . . . . . . . .

DISTRIBUTION OF OUTPUT, ROW  17
  COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT
   1   15595     4     299    15      68    16     225    17    2399    18    4047    19       9    20      76    21     518
  22     560    24      49    32     326    35      43    36      12    37      22    41       1    44      18    45       5
  47      23    75      38    81      23    84       9    88     189    89     425    96   17527    97     172    98     601
 101    5522

COMPOSITION OF INPUT, COLUMN  17
  ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT
   2   11331     3       1     7       3     9      42    12     154    14      31    15      86    17    2399    19     195
  21     242    22    3163    26       8    27     411    28       3    29      31    32     756    33     542    34     563
  35     222    37     899    40      13    41       1    49     395    52      10    56       1    58      29    60       1
  61       9    68       1    72       1    74       1    75    4107    76      78    78     279    79      32    80       4
  81    2618    82     214    83     145    84      86    85    2668    86      84    88      48    89     199    93     426
  94    8321    95    7946

 . . . . . . . . . . . . .  SECTOR  18. BAKERY PRODUCTS                  TOTAL OUTPUT:     73298. . . . . . . . . . . . . . . .

DISTRIBUTION OF OUTPUT, ROW  18
  COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT
  15      49    18     365    22     601    75     153    88     555    89    1106    96   69848    97     420    98      64
 101     137

COMPOSITION OF INPUT, COLUMN  18
  ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT
   2     476     7       1    12     234    14     319    15     440    16      80    17    4047    18     365    19     932
  21     747    22    2550    26      37    28       4    29      24    32    1350    33    1107    34     772    35      58
  36     558    37      12    40     210    41       1    44       1    45       1    52      93    56       1    58      21
  59       1    60      17    61      14    68      15    72       3    74       3    75    2120    76     575    78     424
  79     137    80       8    81    2332    82     494    83     816    84    1145    85    2135    86    1210    88     344
  89     582    90      35    93    1774    94   12300    95   32374

 . . . . . . . . . . . . .  SECTOR  19. SUGAR                            TOTAL OUTPUT:     38624. . . . . . . . . . . . . . . .

DISTRIBUTION OF OUTPUT, ROW  19
  COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT
   1      57    15     370    16     570    17     195    18     932    19    4906    20     223    21    2324    22     313
  32       5    35       3    37     191    75       8    88      23    89     575    96   17612    97      78    98      14
 102   10223

COMPOSITION OF INPUT, COLUMN  19
  ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT
   2    7640     7       9    12     107    17       9    19    4906    24       5    26       7    28       2    29      25
  32     135    33     282    34     454    37       5    40       9    41       1    44       4    45      26    52       8
  56       1    58      32    59       8    60       1    61       7    68       1    72       1    75    2212    76      40
  78      58    79     127    80      18    81     847    82     200    83     271    84      30    85     346    86      51
  88      23    89     151    90      23    93    7642    94    1062    95   11837

 . . . . . . . . . . . . .  SECTOR  20. CANDY                            TOTAL OUTPUT:      8369. . . . . . . . . . . . . . . .

DISTRIBUTION OF OUTPUT, ROW  20
  COL. AMOUNT   COL. AMOUNT
  96    8367    98       2
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TABLE C.2:                     INTERINDUSTRY TRANSACTIONS, 1966 (THOUSANDS OF DOLLARS)                          PAGE:  49
                                                STATE OF MARYLAND


COMPOSITION OF INPUT, COLUMN  20
  ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT
   2     235     12     22     14      2     15     52     16     31     17     76     19    223     21     37     22     69
  26       5     28      1     29      5     32     90     33    475     34     89     35     41     36     53     37      1
  40       1     49    219     52     17     58      4     61      2     75    343     76     23     78     45     79      4
  80       1     81    334     82     49     83     94     84     80     85    675     86     11     88     14     89     49
  90       8     93    975     94   1150     95   2762

. . . . . . . . . . . . . .   SECTOR  21. BEVERAGES                    TOTAL OUTPUT:   259266. . . . . . . . . . . . . . . . . .

DISTRIBUTION OF OUTPUT, ROW   21
  COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT
   15    704     16    872     17    242     18    747     20     37     21  28523     22     22     35    164     75    330
   88     11     89  21543     96 203902     97    178     98     77    101    520    102   1393

COMPOSITION OF INPUT, COLUMN  21
  ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT
   2    4841      7     10     12    822     16    915     17    518     19   2324     21  28523     22     53     24      7
  26      42     28      9     29   1062     32    941     33   1683     34   1062     35    559     37    153     40     71
  41       3     43   9522     44      1     45      1     49  15322     51   1627     52     19     56      1     58     59
  59       6     60     16     61     40     68     14     72      3     74      4     75   5911     76   1004     78    627
  79     125     80     69     81   4724     82   1968     83   1512     84    811     85  20086     86   1290     88    542
  89    2517     93   4225     94   5864     95 137759

. . . . . . . . . . . . . .   SECTOR  22. MISC FOOD PRODUCTS          TOTAL OUTPUT:   111658. . . . . . . . . . . . . . . . . .

DISTRIBUTION OF OUTPUT, ROW   22
  COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT
    1   4548      2     26      3     59     12     58     15     59     16   1746     17   3163     18   2550     20     69
   21     53     22  10978     32     61     34    170     35    283     36     90     37   1094     38    775     39     22
   41      2     42      8     44     29     74     23     75    294     81     80     88    237     89   2003     96  80286
   97    448     98   1443    100    795    101    206

COMPOSITION OF INPUT, COLUMN  22
  ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT
   1     609      2  24880      3     27      7      8      9      4     12    378     14    251     15      4     16     34
  17     560     18    601     19    313     21     22     22  10978     24      2     26     24     28      4     29     77
  32     727     33   1183     34   1638     35    324     36    252     37     30     40    397     41      3     43   1744
 .45       2     49   2757     51    194     52    108     56      1     56     69     59      4     60      3     61     23
  68       2     72      2     74      2     75   6554     76    262     78    754     79    150     80     38     81   3371
  82     597     83    790     84    321     85   7516     86    210     88    169     89    418     90    105     93   8965
  94    9744     95  23253

. . . . . . . . . . . . . .   SECTOR  23. TOBACCO                      TOTAL OUTPUT:        0. . . . . . . . . . . . . . . . . .

. . . . . . . . . . . . . .   SECTOR  24. FABRICS & YARN               TOTAL OUTPUT:    60303. . . . . . . . . . . . . . . . . .

DISTRIBUTION OF OUTPUT, ROW   24
  COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT
    2     36     15     12     19      5     21      7     22      2     24   8452     26  33372     27   5090     30    764
   31      9     32    234     34     20     35      5     37      5     38      2     40   1424     42    321     44    170
   46      2     47      4     48     34     52      1     56      2     58     18     60      8     63      7     64      1
   66     17     68      6     69     28     70     79     71     20     72    225     73      1     74    342     84    247
   85     22     96   8615     97     94     98    226     99    220    100    151
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COMPOSITION OF INPUT, COLUMN  24
 ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT
   1     129      2    3617      7       6      9       2     12     215     17      49     24    8452     32     186     33     310
  34       3     35    1012     36    4261     37     228     38      18     40     121     41       2     43     216     52       8
  56       1     58     303     59       3     60       1     61      15     68       1     72       3     74       2     75    1255
  76     148     78     612     79      37     80      15     81    1382     82     254     83     349     84      32     85     961
  86      47     88      55     89     213     90      26     93    1233     94   18489     95   16031

. . . . . . . . . . . . . .   SECTOR  25. RUGS, TIRE CORD, MISC TEXTILES   TOTAL OUTPUT:        0. . . . . . . . . . . . . . . .

. . . . . . . . . . . . . .   SECTOR  26. APPAREL                          TOTAL OUTPUT:   281671. . . . . . . . . . . . . . . .

DISTRIBUTION OF OUTPUT, ROW   26
 COL. AMOUNT    COL. AMOUNT    COL. AMOUNT    COL. AMOUNT    COL. AMOUNT    COL. AMOUNT    COL. AMOUNT    COL. AMOUNT    COL. AMOUNT
  12     187     13      18     14     168     15      26     16      55     17       8     18      37     19       7     20       5
  21      42     22      24     26   28809     27      83     28      51     29      13     30      34     31      17     32      47
  33      60     35      29     36      18     37      20     38      11     39       2     40     125     42      63     43      55
  44     151     45     326     46      24     47      14     48      21     49      72     50      97     51      32     52      39
  55       4     56       3     57      59     58      47     59      18     60      26     61       6     62      22     63      14
  64       1     65       2     66     176     67      30     68      10     69      47     70      91     71     108     72      27
  73       2     74      66     75     134     76      43     78      50     79      13     80       3     81      83     84     525
  86      72     88      25     89     113     96  245710     97    1109     98     651    100     246    101    1345

COMPOSITION OF INPUT, COLUMN  26
 ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT
   3     152      7       2     12     328     24   33372     26   28809     27    2989     32     100     33    2057     34      27
  35     194     36    5035     37     243     40     379     41     343     52      94     56       3     58     103     59       9
  60       4     61      78     68       2     72      22     73       1     74    1691     75    1916     76    1253     78     865
  79      41     80      28     81    7429     82    1639     83    4369     84     103     85    6278     86     330     88     579
  89    1690     90     183     93    4317     94   76836     95   97774

. . . . . . . . . . . . . .   SECTOR  27. HOUSEHOLD TEXTILES & UPHOLST     TOTAL OUTPUT:    40060. . . . . . . . . . . . . . . .

DISTRIBUTION OF OUTPUT, ROW   27
 COL. AMOUNT    COL. AMOUNT    COL. AMOUNT    COL. AMOUNT    COL. AMOUNT    COL. AMOUNT    COL. AMOUNT    COL. AMOUNT    COL. AMOUNT
   1     213      2     463      3       3     12       3     17     411     26    2989     27    2798     30       4     35      81
  42     145     44     468     69    1656     71     549     74       1     81      88     84     923     86     122     88     220
  96   25662     97     142     98     336     99    1812    100     474    101     497

COMPOSITION OF INPUT, COLUMN  27
 ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT
  12      71     24    5090     26      83     27    2798     28      21     32      11     33     464     34       4     35       6
  36     309     37       3     40     968     45      25     47      26     52      15     61       8     72       2     74      15
  75     350     76     183     78     129     79       6     80      11     81    1799     82     305     83     502     84      89
  85     708     86      45     88      79     89     305     90      26     93     677     94   12849     95   12076
 . . . . . . . . . . . . . .   SECTOR  28. LUMBER & PROD EXC CONTAINERS     TOTAL OUTPUT:    58112. . . . . . . . . . . . . . . . .

DISTRIBUTION OF OUTPUT, ROW   28
  COL. AMOUNT    COL. AMOUNT    COL. AMOUNT    COL. AMOUNT    COL. AMOUNT    COL. AMOUNT    COL. AMOUNT    COL. AMOUNT    COL. AMOUNT
    1       7      2       5      6       4      7       7     12    3736     13      19     16       4     17       3     18       4
   19       2     20       1     21       9     22       4     27      21     28    4482     29     707     30     947     31     421
   32    1496     33      12     34     111     35      59     36       6     39       1     40     124     42      56     43     298
   44     165     45     156     46       7     47       1     48      69     49      32     50      57     51      77     52      68
   55       1     56       1     57      16     58      71     59      12     60       4     61       1     62      26     63       4
   64       1     66      19     68       1     69      34     70       6     71    1258     72       6     74     256     75      11
   81      30     89       8     96    1966     97      30     99     476    100   40696

COMPOSITION OF INPUT, COLUMN  28
  ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT
    3     535      7       1     12     318     26      51     28    4482     29       3     32      42     33     114     34       6
   35     452     36      70     37       7     38     158     40      57     41       4     43      83     44     192     45     282
   46       2     47      26     48       1     51      38     52     436     56       2     58     168     59       3     60       5
   61      12     68       4     72       4     74       3     75    2080     76     214     78     473     79      38     80       8
   81    1268     82     649     83     732     85    1514     86     433     88     110     89     407     90      21     93    4724
   94   15283     95   22599

 . . . . . . . . . . . . . .   SECTOR  29. WOODEN CONTAINERS                TOTAL OUTPUT:    10326. . . . . . . . . . . . . . . . .

DISTRIBUTION OF OUTPUT, ROW   29
  COL. AMOUNT    COL. AMOUNT    COL. AMOUNT    COL. AMOUNT    COL. AMOUNT    COL. AMOUNT    COL. AMOUNT    COL. AMOUNT    COL. AMOUNT
    2    1131      4     321     13      51     14     188     15     139     16      57     17      31     18      24     19      25
   20       5     21    1062     22      77     28       3     29     345     30       3     31       6     32       2     33       2
   35      26     36      18     37      16     38      15     40      62     41       1     42      15     43     263     44      44
   45      70     46      14     47       6     48      13     49      17     50     129     51      22     52      29     55       3
   57      10     58      17     59      10     60      16     61       4     62     177     63       9     64       3     65       1
   66     154     67      11     68       8     69      29     70      33     71       8     72      19     74      22     81     762
   98       5     99    1413    101      43    102    3334

COMPOSITION OF INPUT, COLUMN  29
  ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT
   12      25     26      13     28     707     29     345     32       5     33      37     34       1     35       2     37       2
   40       2     41       1     45     994     51      14     52      23     56       1     58      38     61       2     72       1
   74       1     75     683     76      45     78      94     79       3     80       1     81     292     82      69     83     140
   84      16     85     244     86      41     88      22     89      87     90       4     93     446     94    2096     95    3829

 . . . . . . . . . . . . . .   SECTOR  30. HOUSEHOLD FURNITURE              TOTAL OUTPUT:    32263. . . . . . . . . . . . . . . . .

DISTRIBUTION OF OUTPUT, ROW   30
  COL. AMOUNT    COL. AMOUNT    COL. AMOUNT    COL. AMOUNT    COL. AMOUNT    COL. AMOUNT    COL. AMOUNT    COL. AMOUNT    COL. AMOUNT
   30     138     31      11     66    1610     71     291     74      36     96   22297     97     143     98     111     99     608
  100    6937    101      80

COMPOSITION OF INPUT, COLUMN  30
  ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT
    7       1     12      55     24     764     26      34     27       4     28     947     29       3     30     138     32      17
   33     485     34       4     35      38     36      44     37       5     38     343     40    2261     41      17     43     253
   45     690     47     215     51      30     52     862     56       1     59       1     61      11     68       1     72       3
   74       5     75     929     76     185     78     183     79       5     80       4     81    1213     82     369     83    1001
   84      29     85    1273     86      91     88      83     89     257     90      24     93     784     94    6144     95   12454
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. . . . . . . . . . . . .   SECTOR  31. OFFICE FURNITURE             TOTAL OUTPUT:     25370. . . . . . . . . . . . . . . . .

DISTRIBUTION OF OUTPUT, ROW  31
  COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT
   12      20    31      91    69       1    70     116    71      37    96    2446    97    2604    98     665    99     483
  100   18765   101     141

COMPOSITION OF INPUT, COLUMN  31
  ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT
    7       1    12      55    24       9    26      17    28     421    29       6    30      11    31      91    32      12
   33     480    34       4    35       5    37       3    38     248    40    1659    41      12    43     543    44     146
   45    2780    47     270    51     174    52     411    59       3    60      33    61      10    68       1    72       1
   74       1    75     514    76     164    78     132    79      16    80       3    81     725    82     441    83     565
   84      27    85     811    86      87    88      88    89     253    90      24    93     373    94    2417    95   11323

. . . . . . . . . . . . .   SECTOR  32. PAPER & PROD EXC CONTAINERS  TOTAL OUTPUT:    114009. . . . . . . . . . . . . . . . .

DISTRIBUTION OF OUTPUT, ROW  32
  COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT
    1      92     2       7     3       1     4       1     6       1     7       1     9      94    12    1043    13      13
   14     711    15    1194    16     994    17     756    18    1350    19     135    20      90    21     941    22     727
   24     186    26     100    27      11    28      42    29       5    30      17    31      12    32   13085    33   22416
   34   27681    35     573    36    1133    37     503    38      10    39      82    40     169    42      73    43      30
   44    2200    45     134    46      10    47       6    48     180    49      25    50     158    51      90    52      68
   55       2    56       2    57      28    58      27    59      21    60      11    61      22    62      38    63     110
   64       2    65       1    66     315    67     277    68       6    69      32    70      61    71     287    72      57
   73      84    74     712    75     119    76      98    77       1    78      73    79      49    80       5    81    8432
   82    1935    83      57    84     447    86      44    87      12    88     602    89      37    90    6538    96   11050
   97     686    98     832    99     221   100    3526

COMPOSITION OF INPUT, COLUMN  32
  ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT
    7      61     9     535    12     576    17     326    19       5    22      61    24     234    26      47    28    1496
   29       2    32   13085    33    3177    34     227    35    2585    36    1202    37     153    40    2087    41      11
   44      91    45       5    52     605    56       5    58     245    59     131    60       2    61      40    68       2
   72       3    74       3    75    5101    76     391    78    1514    79     307    80     154    81    3060    82     694
   83     941    84     351    85    3206    86     173    88     180    89     603    90      51    93    2204    94   20286
   95   47788

. . . . . . . . . . . . .   SECTOR  33. PAPER CONTAINERS             TOTAL OUTPUT:     99844. . . . . . . . . . . . . . . . .

DISTRIBUTION OF OUTPUT, ROW  33
  COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT
    2      35     4    2129    13      77    14    2383    15    4868    16    1943    17     542    18    1107    19     282
   20     475    21    1683    22    1183    24     310    26    2057    27     464    28     114    29      37    30     485
   31     480    32    3177    33    3175    34     967    35     659    36     347    37    2459    38     301    39     123
   40    3932    41       5    42     435    43    5242    44    1087    45     410    46      19    47      18    48     151
   49    3700    50     647    51     554    52     752    55      14    56       7    57     185    58      69    59      81
   60     128    61      13    62     518    63      65    64      48    65      57    66     988    67     213    68     178
   69      38    70      91    71      28    72     195    73      35    74    1121    75     177    81   10655    84     380
   85     265    88      31    96    1034    97    1272    98      63    99     293   100     268   101      99   102   32417
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COMPOSITION OF INPUT, COLUMN  33
  ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT
    7       1     9       6    12     384    26      60    28      12    29       2    32   22416    33    3175    34     113
   35    1036    36     451    37      10    40      74    41       2    47     182    52     145    56       1    58     154
   59       2    60       2    61      32    68       2    72       5    74       4    75    3863    76     534    78     527
   79      54    80       9    81    1790    82     371    83    1191    84     360    85    2384    86     200    88     206
   89     615    90      60    93     811    94   19341    95   39255

. . . . . . . . . . . . . .   SECTOR  34. PRINTING & PUBLISHING        TOTAL OUTPUT:   284503. . . . . . . . . . . . . . . .

DISTRIBUTION OF OUTPUT, ROW  34
 COL.  AMOUNT  COL.  AMOUNT  COL.  AMOUNT  COL.  AMOUNT  COL.  AMOUNT  COL.  AMOUNT  COL.  AMOUNT  COL.  AMOUNT  COL.  AMOUNT
    1      84     2     113     3       1     4       1     9       4    12      29    13      10    14    1216    15     628
   16    1220    17     563    18     772    19     454    20      89    21    1062    22    1638    24       3    26      27
   27       4    28       6    29       1    30       4    31       4    32     227    33     113    34   36190    35      16
   36       8    37     448    38       8    39       1    40      27    42       3    43       9    44      40    45      60
   46       5    47       3    48       6    49    9031    50      32    51       9    52      16    55       2    56       2
   57      17    58      20    59       8    60       6    61       3    62       9    63      50    64       3    66    1515
   67      11    68       3    69      10    70      54    71      21    72      15    73       1    74      30    75    1069
   76      16    77       9    78      35    79       8    80       1    81    2519    82    5659    83      13    84     128
   85  117531    86       5    87    1088    88    9556    89      93    90   19407    96   62180    97    8224    98   -2073
   99    2297   100      48   101     723

COMPOSITION OF INPUT, COLUMN  34
  ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT
    7       1    12     528    22     170    24      20    28     111    32   27681    33     967    34   36190    35    4147
   36     397    37      36    38     192    40    1422    41       2    44       1    45      25    46      22    47       6
   48      15    52     122    56       3    58     477    59       2    60      13    61     207    68       9    72      13
   73      95    74     126    75    3612    76    3317    78    1212    79      68    80      30    81    6990    82    2341
   83   19578    84    1064    85   14113    86    1099    88    1887    89    5943    90     845    93    1779    94   34086
   95  113538

. . . . . . . . . . . . . .   SECTOR  35. BASIC CHEMICALS              TOTAL OUTPUT:   115559. . . . . . . . . . . . . . . .

DISTRIBUTION OF OUTPUT, ROW  35
 COL.  AMOUNT  COL.  AMOUNT  COL.  AMOUNT  COL.  AMOUNT  COL.  AMOUNT  COL.  AMOUNT  COL.  AMOUNT  COL.  AMOUNT  COL.  AMOUNT
    1     687     2   11537     3       3     4      24     6      65     7      52     9     895    12     878    13     115
   14     123    15      65    16     110    17     222    18      58    20      41    21     559    22     324    24    1012
   26     194    27       6    28     452    29       2    30      38    31       5    32    2585    33    1036    34    4147
   35   14557    36   12018    37    4353    38    4653    39     397    40    3810    41     113    42       1    43    3628
   44    2311    45    8887    46     161    47      70    48     580    49     368    50     428    51     187    52     574
   55       9    56       7    57     144    58     153    59      58    60      43    61      15    62     202    63      97
   64       8    65       9    66     168    67     321    68     278    69     119    70     125    71      89    72      77
   73     220    74     238    75     420    76      18    78     124    80     193    81     204    82       8    83    4074
   84     564    85    1220    86      73    87     848    88     601    90     211    96    2684    97    3511    98    2144
   99   11993   100    1954

COMPOSITION OF INPUT, COLUMN  35
  ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT
    2     100     3      18     6      81     7      45     9     252    12     358    14      74    15       2    16       7
   17      43    19       3    21     164    22     283    24       5    26      29    27      81    28      59    29      26
   32     573    33     659    34      16    35   14557    36     152    37      87    38      52    40      32    41      13
   43      45    44     164    45     894    46      18    47      62    48     231    49    1329    51       2    52     281
   56       6    58     892    59      33    60       1    61      72    63      25    68       2    72       2    74       2
   75    4056    76     554    78    2227    79     966    80      95    81    3134    82     850    83     896    84     156
   85    3119    86     204    88     218    89    2074    90     115    93    7953    94   12532    95   54073
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SECTOR 36. PLASTICS & SYNTHETICS TOTAL OUTPUT: 56856.

DISTRIBUTION OF OUTPUT, ROW 36

COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT
13	7	18	558	20	53	22	252	24	4261	26	5035	27	309	28	70	30	44
32	1202	33	451	34	397	35	152	36	334	38	2179	40	27288	42	34	44	1151
48	1106	49	128	51	58	58	65	61	5	63	49	64	7	65	18	66	1272
67	110	68	43	69	23	70	70	71	251	72	54	73	11	74	1037	81	429
96	238	97	2	98	27	99	339	100	33	101	7702						

COMPOSITION OF INPUT, COLUMN 36

ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT
7	21	12	375	17	12	22	90	26	18	28	6	29	18	32	1133	33	347
34	8	35	12018	36	334	37	193	40	14	41	3	48	5	49	181	52	7
56	1	59	5	60	1	61	35	68	1	72	1	74	1	75	1585	76	296
78	472	79	83	80	29	81	1661	82	388	83	515	84	67	85	3027	86	70
88	103	89	51	90	1	93	2184	94	8215	95	23277						

SECTOR 37. DRUGS, CLEANING & TOILET ITEMS TOTAL OUTPUT: 112059.

DISTRIBUTION OF OUTPUT, ROW 37

COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT
1	1308	12	1	13	5	14	40	15	21	16	148	17	899	18	12	19	5
20	1	21	153	22	30	24	228	26	243	27	3	28	7	29	2	30	5
31	3	32	153	33	10	34	36	35	87	36	193	37	6617	38	218	39	113
40	2	41	95	42	64	43	9	44	891	45	47	46	4	47	1	48	3
49	174	50	139	51	42	52	42	55	2	56	1	57	27	58	59	59	6
60	14	61	1	62	5	63	4	66	46	67	7	68	2	69	12	70	31
71	21	72	5	74	11	75	77	81	916	84	4674	85	3203	88	12552	89	553
96	65403	97	4693	98	1000	99	5310	100	82	101	1288						

COMPOSITION OF INPUT, COLUMN 37

ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT
1	23	2	74	3	1	7	2	9	30	12	352	14	65	17	22	19	191
22	1094	24	5	26	20	29	16	32	503	33	2459	34	448	35	4353	37	6617
38	28	40	3771	41	1	43	1399	44	76	49	2170	51	282	52	101	56	1
59	1	60	15	61	59	65	1	72	9	74	1	75	1747	76	486	78	233
79	14	80	7	81	3121	82	684	83	1077	84	813	85	23258	86	63	88	197
89	705	90	45	93	1228	94	8375	95	45817								

SECTOR 38. PAINT & ALLIED PRODUCTS TOTAL OUTPUT: 37770.

DISTRIBUTION OF OUTPUT, ROW 38

COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT
3	5	12	9282	24	18	28	158	30	343	31	248	34	192	35	52	37	28
40	78	43	58	48	7	49	2477	50	797	51	115	52	208	55	12	56	10
57	19	58	13	59	6	61	2	62	162	63	36	64	10	65	7	66	27
67	16	68	2	69	442	70	122	71	346	72	15	74	200	75	34	81	23
84	49	85	92	86	743	96	217	97	46	98	23	99	826	100	19752	101	451

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TABLE C.2:                          INTERINDUSTRY TRANSACTIONS, 1966 (THOUSANDS OF DOLLARS)                                PAGE:  55
                                                 STATE OF MARYLAND

COMPOSITION OF INPUT, COLUMN  38
  ROW   AMOUNT    ROW   AMOUNT    ROW   AMOUNT    ROW   AMOUNT    ROW   AMOUNT    ROW   AMOUNT    ROW   AMOUNT    ROW   AMOUNT    ROW   AMOUNT
    9       84     12      135     22      775     24        2     26       11     29       15     32       10     33      301     34        8
   35     4653     36     2179     37      218     40        9     41        1     44       71     45      169     48       93     49     2770
   52        7     60        1     61       22     68        1     72        1     74        1     75     1129     76      276     78      144
   79       11     80        7     81     2199     82      273     83      386     84      287     85     2107     86       58     88      103
   89      441     90       34     93     1426     94     5048     95    12306

 . . . . . . . . . . . . .  SECTOR  39. PETROLEUM REFINING                   TOTAL OUTPUT:     35062. . . . . . . . . . . . . . . . . . .

DISTRIBUTION OF OUTPUT, ROW   39
  COL.  AMOUNT    COL.  AMOUNT    COL.  AMOUNT    COL.  AMOUNT    COL.  AMOUNT
   96    28903     97     1051     98      414     99     2152    100     2542

COMPOSITION OF INPUT, COLUMN  39
  ROW   AMOUNT    ROW   AMOUNT    ROW   AMOUNT    ROW   AMOUNT    ROW   AMOUNT    ROW   AMOUNT    ROW   AMOUNT    ROW   AMOUNT    ROW   AMOUNT
    9      115     12      646     22       22     26        2     28        1     32       82     33      123     34        1     35      397
   37      113     40        1     41        1     44       35     45        2     48       12     49      194     52        3     59        1
   61       23     75     2070     76       32     78      138     79      125     80       12     81      461     82      427     83      912
   84       32     85     1275     86       23     88       15     89       35     90        9     93     3160     94    16925     95     7636

 . . . . . . . . . . . . .  SECTOR  40. RUBBER & PLASTIC PRODUCTS            TOTAL OUTPUT:    199775. . . . . . . . . . . . . . . . . . .

DISTRIBUTION OF OUTPUT, ROW   40
  COL.  AMOUNT    COL.  AMOUNT    COL.  AMOUNT    COL.  AMOUNT    COL.  AMOUNT    COL.  AMOUNT    COL.  AMOUNT    COL.  AMOUNT    COL.  AMOUNT
    1      500      2     1488      3        4      4        3      6       22      7       81      9     3208     12     4217     13      368
   14     2304     15      697     16      342     17       13     18      210     19        9     20        1     21       71     22      397
   24      121     26      379     27      968     28       57     29        2     30     2261     31     1659     32     2087     33       74
   34     1422     35       32     36       14     37     3771     38        9     39        1     40    11786     42     2368     43     2057
   44     1509     45      302     46      202     47       21     48      114     49      572     50       41     51      526     52      852
   55      204     56      199     57      321     58      974     59      118     60      102     61      253     62     1386     63      400
   64      152     65      102     66     3564     67      965     68      728     69     5970     70      957     71     2847     72      871
   73       95     74     2685     75     4045     76      301     77        5     78       64     79       20     80       10     81     4583
   82      133     83     1631     84     1008     85      184     86     6243     87       33     88      882     89       44     90      376
   96    26438     97     2327     98      693     99     4062    100    18639    102    58018

COMPOSITION OF INPUT, COLUMN  40
  ROW   AMOUNT    ROW   AMOUNT    ROW   AMOUNT    ROW   AMOUNT    ROW   AMOUNT    ROW   AMOUNT    ROW   AMOUNT    ROW   AMOUNT    ROW   AMOUNT
    7       14      9      153     12      821     24     1424     26      125     28      124     29       62     32      169     33     3932
   34       27     35     3810     36    27286     37        2     38       78     40    11786     41        2     43      490     44      104
   45      637     46       34     47       77     48       20     49       35     51      137     52      467     56        4     57      115
   58       80     59        5     60      125     61       97     68        1     72        8     74       83     75     4301     76      778
   78     2118     79      121     80       52     81     5562     82     1196     83     2218     84      531     85     8188     86      265
   88      467     89     1600     90      138     93     3962     94    22595     95    93347

 . . . . . . . . . . . . .  SECTOR  41. LEATHER TANNING                      TOTAL OUTPUT:      2493. . . . . . . . . . . . . . . . . . .

DISTRIBUTION OF OUTPUT, ROW   41
  COL.  AMOUNT    COL.  AMOUNT    COL.  AMOUNT    COL.  AMOUNT    COL.  AMOUNT    COL.  AMOUNT    COL.  AMOUNT    COL.  AMOUNT    COL.  AMOUNT
   13        1     14        2     15        2     16        2     17        1     18        1     19        1     21        3     22        3
   24        2     26      343     28        4     29        1     30       17     31       12     32       11     33        2     34        2
   35       13     36        3     37        1     38        1     39        1     40        2     41      175     42     1450     43        3
   44       45     45       69     46        4     47        3     48        2     49        4     50        5     51        1     52        1
   57        2     58       39     59       11     60        1     63        1     66        2     69        3     70        4     71        5
   74       38     84       86     98        4     99       10    100       89
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COMPOSITION OF INPUT, COLUMN  41
  ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT
   12       3     14       1     17       1     22       2     29       1     33       5     35     113     37      95     41     175
   44       1     52       1     61       1     75      27     76       5     78      13     79       1     80       1     81      45
   82      16     83      33     85      34     86       2     88       3     89       8     90       1     93     116     94     330
   95    1455

 . . . . . . . . . . . . . .   SECTOR  42. SHOES & OTHER LEATHER PRODUCTS    TOTAL OUTPUT:     22572. . . . . . . . . . . . . . . .

DISTRIBUTION OF OUTPUT, ROW  42
  COL. AMOUNT    COL. AMOUNT    COL. AMOUNT    COL. AMOUNT    COL. AMOUNT    COL. AMOUNT    COL. AMOUNT    COL. AMOUNT    COL. AMOUNT
    1      23      4      13     42     113     52      14     72       5     73       2     74      33     81      18     84     536
   87      18     89     114     96   21119     97       6     98      11     99     534    100      11

COMPOSITION OF INPUT, COLUMN  42
  ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT
   12      42     22       8     24     321     26      63     27     145     28      56     29      15     32      73     33     435
   34       3     35       1     36      34     37      64     40    2368     41    1450     42     113     43       4     45      44
   48       2     52      83     61      11     72       2     74     137     75     292     76     120     78      86     79       2
   80       3     81     673     82     181     83     241     84      19     85     990     86      32     88      50     89     140
   90      21     93     947     94    3533     95    9767

 . . . . . . . . . . . . . .   SECTOR  43. GLASS & GLASS PRODUCTS            TOTAL OUTPUT:     88729. . . . . . . . . . . . . . . .

DISTRIBUTION OF OUTPUT, ROW  43
  COL. AMOUNT    COL. AMOUNT    COL. AMOUNT    COL. AMOUNT    COL. AMOUNT    COL. AMOUNT    COL. AMOUNT    COL. AMOUNT    COL. AMOUNT
    1      46     12    2453     15     208     16    2805     21    9522     22    1744     24     216     28      83     30     253
   31     543     35      45     37    1399     40     490     42       4     43    5058     48      14     50    1060     51       1
   52      62     61       4     62      71     63      23     64       4     65      81     66    1274     67     933     68      18
   69    1959     70       2     71     797     72     132     73      55     74     332     75      59     81     592     84       6
   86    1744     88      79     89      43     90      19     96    2333     97     825     98     182     99     325    100    9506
  102   41328

COMPOSITION OF INPUT, COLUMN  43
  ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT
    7       6      9     946     12     455     26      55     28     298     29     263     32      30     33    5242     34       9
   35    3628     37       9     38      58     40    2057     41       3     43    5058     44    1160     45     142     48      83
   50      11     51      15     52       6     56       2     57      85     59       4     60       1     61      32     68       1
   72       4     74      50     75    1806     76     279     78     960     79     823     80      33     81    2126     82     817
   83     959     84     152     85    3563     86     168     88     154     89     674     90      59     93    1516     94    3504
   95   51423

 . . . . . . . . . . . . . .   SECTOR  44. STONE & CLAY PRODUCTS             TOTAL OUTPUT:    232816. . . . . . . . . . . . . . . .

DISTRIBUTION OF OUTPUT, ROW  44
  COL. AMOUNT    COL. AMOUNT    COL. AMOUNT    COL. AMOUNT    COL. AMOUNT    COL. AMOUNT    COL. AMOUNT    COL. AMOUNT    COL. AMOUNT
    1      12      2     340      3       1      6       2      7       6      9      86     12    6782     15       1     18       1
   19       4     21       1     28     192     31     146     32      91     34       1     35     164     37      76     38      71
   39      35     40     104     41       1     43    1160     44   19457     45     635     46      43     47      79     48     235
   50     149     51     106     52     308     55      19     56       3     57     499     58     117     59     170     60     181
   62     234     63     167     64      16     65      12     67     118     68      79     69     253     70     276     71     479
   72      55     73       6     74     120     75      98     76       1     81     279     83       3     84     738     85      99
   86    1623     88      33     89      34     96    3962     97     430     98    -146     99    9255    100  145931    102   37378
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COMPOSITION OF INPUT, COLUMN 44

ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT
2	192	6	1	7	175	9	19457	12	1633	17	18	22	29	24	170	26	151
27	468	28	165	29	44	32	2200	33	1087	34	40	35	2311	36	1151	37	891
40	1509	41	45	44	19457	45	2079	46	29	47	315	48	44	50	110	51	37
52	1157	55	130	56	34	57	263	59	113	60	6	61	84	65	8	68	15
72	12	74	155	75	17502	76	1499	78	3943	79	1619	80	171	81	5930	82	2368
83	1801	84	246	85	8668	86	1406	88	666	89	2044	90	133	93	6872	94	14224
95	107939																

. . . . SECTOR 45. IRON & STEEL TOTAL OUTPUT: 605337. . . . .

DISTRIBUTION OF OUTPUT, ROW 45

COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT
6	54	7	85	9	1139	12	8084	13	1081	15	1	18	1	19	26	21	1
22	2	27	25	28	282	29	994	30	690	31	2780	32	5	34	25	35	894
38	169	39	2	40	637	42	44	43	142	44	2079	45	121221	46	83	47	14
48	85	49	68590	50	33086	51	9135	52	7582	55	1256	56	573	57	6119	58	6293
59	3695	60	3031	61	89	62	3731	63	1215	64	167	65	142	66	1576	67	469
68	468	69	18832	70	3257	71	20876	72	844	73	52	74	1755	75	3475	85	10
90	70	96	617	97	55	98	73	99	2677	100	21992	101	6874	102	236016		

COMPOSITION OF INPUT, COLUMN 45

ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT
6	5	7	1043	9	2080	12	6386	17	5	26	326	28	156	29	70	32	134
33	410	34	60	35	8887	37	47	40	302	41	69	44	635	45	121221	46	1331
47	938	48	2408	49	34	51	2635	52	3891	56	30	57	253	58	604	59	1910
60	6663	61	234	62	130	63	845	68	5	72	113	73	1	74	408	75	35376
76	3381	78	10139	79	2843	80	280	81	15038	82	6897	83	1564	84	620	85	14642
86	1001	88	949	89	2294	90	255	93	42517	94	37650	95	265624				

. . . . SECTOR 46. COPPER TOTAL OUTPUT: 121052. . . . .

DISTRIBUTION OF OUTPUT, ROW 46

COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT
9	37	12	1207	13	516	28	2	34	22	35	18	40	34	44	29	45	1331
46	37144	47	33	48	10311	50	2008	51	1239	52	1400	55	15	56	22	57	307
58	672	59	448	60	322	61	15	62	2067	63	387	64	6	65	46	66	602
67	153	68	126	69	554	70	38	71	540	72	392	73	1	74	656	75	17
97	1	98	459	99	2516	100	14281	102	41077								

COMPOSITION OF INPUT, COLUMN 46

ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT
6	1651	7	3	9	278	12	286	24	2	26	24	28	7	29	14	32	10
33	19	34	5	35	161	37	4	40	202	41	4	44	43	45	83	46	37144
47	250	48	257	52	18	56	2	57	546	58	54	59	100	60	128	61	33
68	1	72	2	74	1	75	2530	76	273	78	635	79	110	80	39	81	3043
82	357	83	221	84	143	85	684	86	76	88	71	89	473	90	44	93	15970
94	17333	95	37715														

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TABLE C.2:                    INTERINDUSTRY TRANSACTIONS, 1966 (THOUSANDS OF DOLLARS)
                                          STATE OF MARYLAND

 . . . . . . . . . . . . . .   SECTOR  47. ALUMINUM                          TOTAL OUTPUT:     49031. . . . . . . . . . . . . . . . .

DISTRIBUTION OF OUTPUT, ROW  47
  COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT
    9       1    12     148    13     315    16       8    27      26    28      26    30     215    31     270    33     182
   34       6    35      62    40      77    44     315    45     938    46     250    47   15453    48    1808    49    6956
   50    5696    51    1213    52     612    55      14    56      17    57     313    58     462    59     164    60     665
   61     220    62     924    63     144    64      24    65      45    66     665    67     137    68      60    69    1414
   70    2344    71    2329    72     191    73      25    74     286    75      37    96     147    98      32    99     237
  100    3556

COMPOSITION OF INPUT, COLUMN  47
  ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT
    6     191     7       1     9      46    12     220    17      23    24       4    26      14    28       1    29       6
   32       6    33      18    34       3    35      70    37       1    40      21    41       3    44      79    45      14
   46      33    47   15453    48     196    52      10    56       1    57     463    59     100    60     631    61      18
   63      33    72       3    74       1    75     890    76     166    78     380    79     116    80       8    81     817
   82     248    83     151    85     748    86      41    88      44    89     244    90      12    93    2847    94    5499
   95   19155

 . . . . . . . . . . . . . .   SECTOR  48. OTHER NON-FERROUS METALS          TOTAL OUTPUT:     75391. . . . . . . . . . . . . . . . .

DISTRIBUTION OF OUTPUT, ROW  48
  COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT
    1       3     2       3     9      16    12    1248    13      72    26       1    34      15    35     231    36       5
   38      93    39      12    40      20    42       2    43      83    44      44    45    2408    46     257    47     196
   48    3080    49      21    50     154    51      71    52     318    55       5    56      12    57     245    58      95
   59     132    60      67    61      28    62      95    63     266    64      24    65      30    66     895    67     192
   68     550    69     122    70    1230    71     327    72     145    73      30    74     383    75      73    76      41
   78      35    84      26    85       9    96     134    97       1    98    1633    99    1244   100   58968

COMPOSITION OF INPUT, COLUMN  48
  ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT
    6     395     7       1     9      24    12     195    24      34    26      21    28      69    29      13    32     180
   33     151    34       6    35     580    36    1106    37       3    38       7    40     114    41       2    43      14
   44     235    45      85    46   10311    47    1808    48    3080    51     346    52     325    56       1    57     354
   58      28    59      76    60     901    61      27    63      49    72       2    74      56    75    1594    76     335
   78     547    79      82    80      22    81    2182    82     379    83     656    84      30    85    1148    86      79
   88      88    89     292    90      39    93   13020    94    7618    95   26677

 . . . . . . . . . . . . . .   SECTOR  49. METAL CONTAINERS                  TOTAL OUTPUT:    175819. . . . . . . . . . . . . . . . .

DISTRIBUTION OF OUTPUT, ROW  49
  COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT
    1     104     2     155     3      67    14    2862    15    1576    16    9137    17     395    20     219    21   15322
   22    2757    35    1329    36     181    37    2170    38    2770    39     194    40      35    45      34    49      68
   72     112    98       1    99    1926   100     752   102  133654

COMPOSITION OF INPUT, COLUMN  49
  ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT
    7       2    12     323    26      72    28      32    29      17    32      25    33    3700    34    9031    35     368
   36     128    37     174    38    2477    40     572    41       4    45   68590    47    6956    48      21    49      68
   51     946    52     124    56       2    57     252    59       8    60       2    61      65    68       2    72       6
   74       4    75    5458    76     307    78     868    79     210    80      18    81    4800    82    1628    83    1597
   84     144    85    6365    86     193    88     165    89     551    90      42    93    1226    94    5906    95   52369
 . . . . . . . . . . . . .   SECTOR  50. HEATING, PLUMBING, STRUC METAL   TOTAL OUTPUT:   143112. . . . . . . . . . . . . . . . . .

DISTRIBUTION OF OUTPUT, ROW  50
  COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT
    6       1      9     34    12    5620    43     11    44     110    50    1444    55      42    56      16    57     151
   58     581     59    101    61       1    62     41    63      24    69      17    71    2891    74       1    83     312
   85       1     96   1059    97       3    98    612    99    5918   100  103660   101   20462

COMPOSITION OF INPUT, COLUMN 50
  ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT
    7       2      9      9    12     404    26     97    28      57    29     129    32     158    33     647    34      32
   35     428     37    139    38     797    40     41    41       5    43    1060    44     149    45   33086    46    2008
   47    5696     48    154    50    1444    51   1530    52    2229    56       3    57     700    59     411    61      52
   62     261     63    362    68       2    72    127    73       2    74       6    75    3464    76    1231    78     930
   79     118     80     25    81    4797    82   1148    83    2426    84    1310    85    5050    86     319    88     452
   89    1181     90     69    93    2295    94   9155    95   56919

 . . . . . . . . . . . . .   SECTOR  51. STAMPINGS, SCREW MACHINE PROD    TOTAL OUTPUT:    45331. . . . . . . . . . . . . . . . . .

DISTRIBUTION OF OUTPUT, ROW  51
  COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT
    1     226     12    382    13      17    15    104    16     730    21    1627    22     194    28      38    29      14
   30      30     31    174    35       2    37    282    40     137    43      15    44      37    45    2635    48     346
   49     946     50   1530    51     750    52    467    55      80    56      78    57     663    58     516    59     170
   60     142     61    134    62    1394    63    231    64      62    65      62    66    4860    67     806    68     154
   69    4905     70   1834    71     722    72    456    73      14    74     395    75      86    81     313    85       2
   86    1913     88     29    96    5145    97    159    98     352    99     503   100    3874   101    4596

COMPOSITION OF INPUT, COLUMN 51
  ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT
   12      83     26     32    28      77    29     22    32      90    33     554    34       9    35     187    36      58
   37      42     38    115    40     526    41      1    43       1    44     106    45    9135    46    1239    47    1213
   48      71     51    750    52     206    56      1    57     348    58      27    59      11    61      16    63       5
   72       2     74      2    75     830    76    303    78     342    79      40    80      13    81     974    82     443
   83     687     84     68    85    1208    86     57    88     112    89     453    90      34    93     990    94    1792
   95   22054

 . . . . . . . . . . . . .   SECTOR  52. HARDWARE, PLATING, WIRE PROD     TOTAL OUTPUT:    55746. . . . . . . . . . . . . . . . . .

DISTRIBUTION OF OUTPUT, ROW  52
  COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT
    1     104      2    139     3      17     4   1415     6       3     7      11     9      76    12    2736    13      75
   14      72     15    101    16     602    17     10    18      93    19       8    20      17    21      19    22     108
   24       8     26     94    27      15    28    436    29      23    30     862    31     411    32     605    33     145
   34     122     35    281    36       7    37    101    38       7    39       3    40     467    41       1    42      83
   43       6     44   1157    45    3891    46     18    47      10    48     325    49     124    50    2229    51     206
   52    1058     55     69    56      31    57    169    58     484    59     262    60     245    61      72    62     936
   63     191     64     36    65      28    66   2156    67     250    68      97    69    2562    70    1057    71    1732
   72     238     73     13    74     409    75    779    81     275    84     317    85      49    86     828    88      14
   89      34     90     66    96    3031    97     85    98     221    99     906   100   17606   101    2197
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TABLE C.2:                     INTERINDUSTRY TRANSACTIONS, 1966 (THOUSANDS OF DOLLARS)                               PAGE:  60
                                                  STATE OF MARYLAND

COMPOSITION OF INPUT, COLUMN  52
 ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT
   7       1      9      17     12     126     24       1     26      39     28      68     29      29     32      68     33     752
  34      16     35     574     37      42     38     208     40     852     41       1     42      14     43      62     44     308
  45    7582     46    1400     47     612     48     318     51     467     52    1058     56       1     57     675     59      25
  61      20     63      42     67       7     72       3     74      38     75     906     76     303     78     463     79      63
  80      12     81    1637     82     530     83     853     84      76     85    1948     86     105     88     156     89     641
  90      47     93    1707     94    3035     95   27836

 . . . . . . . . . . . . . .   SECTOR  53. ENGINES & TURBINES            TOTAL OUTPUT:        0. . . . . . . . . . . . . . . . . .

 . . . . . . . . . . . . . .   SECTOR  54. FARM MACHINERY & EQUIPMENT    TOTAL OUTPUT:        0. . . . . . . . . . . . . . . . . .

 . . . . . . . . . . . . . .   SECTOR  55. CONSTRUCTION & MINING MACHINES  TOTAL OUTPUT:   7755. . . . . . . . . . . . . . . . . .

DISTRIBUTION OF OUTPUT, ROW   55
 COL. AMOUNT    COL. AMOUNT    COL. AMOUNT    COL. AMOUNT    COL. AMOUNT    COL. AMOUNT    COL. AMOUNT    COL. AMOUNT    COL. AMOUNT
   6       7      7      21      9     219     12     195     44     130     55      38     71      25     85      24     97     111
  98      40     99     498    100    3536    101    2910

COMPOSITION OF INPUT, COLUMN  55
 ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT
  12      17     26       4     28       1     29       3     32       2     33      14     34       2     35       9     37       2
  38      12     40     204     44      19     45    1256     46      15     47      14     48       5     50      42     51      80
  52      69     55      38     57     370     59     220     60      18     61       7     63      19     68       5     75     135
  76      40     78      51     79       4     80       1     81     272     82     114     83      57     84      14     85     211
  86      15     88      24     89      79     90       6     93      44     94    1033     95    3205

 . . . . . . . . . . . . . .   SECTOR  56. MATERIAL HANDLING EQUIPMENT   TOTAL OUTPUT:     5467. . . . . . . . . . . . . . . . . .

DISTRIBUTION OF OUTPUT, ROW   56
 COL. AMOUNT    COL. AMOUNT    COL. AMOUNT    COL. AMOUNT    COL. AMOUNT    COL. AMOUNT    COL. AMOUNT    COL. AMOUNT    COL. AMOUNT
   6       1      9      64     12     199     13       1     14       1     15       1     16       1     17       1     18       1
  19       1     21       1     22       1     24       1     26       3     28       2     29       1     30       1     32       5
  33       1     34       3     35       6     36       1     37       1     40       4     43       2     44      34     45      30
  46       2     47       1     48       1     49       2     50       3     51       1     52       1     56      37     57       6
  58       1     60       1     66       3     69       1     70       2     71       5     74       1     75       2     97       5
  98      34     99     238    100    4505    101     244

COMPOSITION OF INPUT, COLUMN  56
 ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT
  12      14     24       2     26       3     28       1     32       2     33       7     34       2     35       7     37       1
  38      10     40     199     44       3     45     573     46      22     47      17     48      12     50      16     51      78
  52      31     56      37     57     128     59     169     60     167     61       5     63      52     68      10     75     113
  76      40     78      24     79       2     81     205     82      50     83      76     84      10     85     151     86      15
  88      24     89      79     90       6     93      50     94     781     95    2272

 . . . . . . . . . . . . . .   SECTOR  57. METALWORKING MACHINERY & EQUIP  TOTAL OUTPUT:  80986. . . . . . . . . . . . . . . . . .

DISTRIBUTION OF OUTPUT, ROW   57
 COL. AMOUNT    COL. AMOUNT    COL. AMOUNT    COL. AMOUNT    COL. AMOUNT    COL. AMOUNT    COL. AMOUNT    COL. AMOUNT    COL. AMOUNT
   6       1      7      10     12      13     13      98     40     115     43      85     44     263     45     253     46     546
  47     463     48     354     49     252     50     700     51     348     52     675     55     370     56     128     57    8666
  58    1949     59     737     60    1260     61      89     62     370     63     363     64      27     65      28     66    3239
  67     361     68     223     69    3348     70    5124     71     691     72     494     75     394     81      68     85     422
  86      30     90     833     97     502     98     803     99    2473    100   32265    101    5003    102    6500
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INTERINDUSTRY TRANSACTIONS, 1966 (THOUSANDS OF DOLLARS)
STATE OF MARYLAND

COMPOSITION OF INPUT, COLUMN 57

ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT
7	1	12	261	26	59	28	16	29	10	32	28	33	185	34	17
35	144														
37	27	38	19	40	321	41	2	44	499	45	6119	46	307	47	313
48	245														
50	151	51	663	52	169	56	6	57	8666	58	6	59	1531	61	66
63	485														
68	1	70	3	72	4	74	6	75	761	76	505	78	550	79	48
80	15														
81	2249	82	740	83	944	84	195	85	2881	86	165	88	294	89	1027
90	75														
93	1065	94	4889	95	44255										

. . . . SECTOR 58. SPECIAL INDUSTRIAL MACHINERY TOTAL OUTPUT: 70196. . . . .

DISTRIBUTION OF OUTPUT, ROW 58

COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT
14	48	15	50	16	54	17	29	18	21	19	32	20	4	21	59
22	69														
24	303	26	103	28	168	29	38	32	245	33	154	34	477	35	892
40	80														
45	604	46	54	48	28	51	27	57	6	58	4179	96	561	97	162
98	290														
99	1206	100	27964	101	6652	102	25640								

COMPOSITION OF INPUT, COLUMN 58

ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT
7	1	9	1	12	103	24	18	26	47	26	71	29	17	32	27
33	69														
34	20	35	153	36	65	37	59	38	13	40	974	41	39	44	117
45	6293														
46	672	47	462	48	95	50	581	51	516	52	484	56	1	57	1949
58	4179														
59	1954	60	251	61	58	63	561	72	28	74	3	75	942	76	465
78	385														
79	31	80	9	81	2434	82	669	83	2918	84	126	85	1958	86	143
88	301														
89	1004	90	74	93	907	94	7025	95	30922						

. . . . SECTOR 59. GENERAL INDUSTRIAL MACHINERY TOTAL OUTPUT: 31130. . . . .

DISTRIBUTION OF OUTPUT, ROW 59

COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT
3	1	6	1	7	2	9	483	12	555	13	40	14	6	15	2
16	8														
18	1	19	8	21	6	22	4	24	3	26	9	28	3	30	1
31	3														
32	131	33	2	34	2	35	33	36	5	37	1	39	1	40	5
43	4														
44	113	45	1910	46	100	47	100	48	76	49	8	50	411	51	11
52	25														
55	220	56	169	57	1531	58	1954	59	1356	60	17	61	28	62	320
63	92														
64	7	66	108	67	3	68	125	69	701	70	484	71	3693	72	46
74	1														
75	120	85	2	97	129	98	360	99	1782	100	11906	101	1904		

COMPOSITION OF INPUT, COLUMN 59

ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT
7	1	9	1	12	77	26	18	28	12	29	10	32	21	33	81
34	8														
35	58	37	6	38	6	40	118	41	11	44	170	45	3695	46	448
47	164														
48	132	50	101	51	170	52	262	57	737	59	1356	61	27	63	160
67	9														
68	3	72	41	74	1	75	374	76	213	78	195	79	26	80	7
81	887														
82	199	83	289	84	52	85	995	86	65	88	127	89	428	90	31
93	613														
94	3146	95	15580												

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 . . . . . . . . . . . . . .   SECTOR  60. MACHINE SHOPS & MISC MACHINERY   TOTAL OUTPUT:    37314. . . . . . . . . . . . . . . . . .

DISTRIBUTION OF OUTPUT, ROW  60
  COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT
    1     48      2     85      3      1      4      1      6     78      7     28      9    386     12     29     13     84
   14      6     15     22     16      2     17      1     18     17     19      1     21     16     22      3     24      1
   26      4     28      5     31     33     32      2     33      2     34     13     35      1     36      1     37     15
   38      1     40    125     43      1     44      6     45   6663     46    128     47    631     48    901     49      2
   55     18     56    167     58    251     60   3683     63     21     64      4     66    906     69   2323     70   8132
   71    991     73      3     75    202     76     15     78      1     79      3     81     64     82      4     83      2
   84     27     85     42     86   2960     87      4     88     25     97   1347     98     63     99    833    100   1117
  101    203    102   4562

COMPOSITION OF INPUT, COLUMN  60
  ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT
   12    132     24      8     26     26     28      4     29     16     32     11     33    128     34      6     35     43
   37     14     40    102     41      1     44    181     45   3031     46    322     47    665     48     67     51    142
   52    245     56      1     57   1260     59     17     60   3683     61     41     63      9     68    109     72      2
   74      2     75    379     76    158     78    227     79     15     80      5     81    839     82    446     83    719
   84     63     85   1470     86     65     88    126     89    403     90     29     93    429     94    943     95  20731

 . . . . . . . . . . . . . .   SECTOR  61. OFFICE & COMPUTING MACHINES      TOTAL OUTPUT:    20661. . . . . . . . . . . . . . . . . .

DISTRIBUTION OF OUTPUT, ROW  61
  COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT
    1      3      2      2      3      1      4      6      6      1      7      1      9     11     12     55     13     42
   14     55     15     24     16     18     17      9     18     14     19      7     20      2     21     40     22     23
   24     15     26     78     27      8     28     12     29      2     30     11     31     10     32     40     33     32
   34    207     35     72     36     35     37     59     38     22     39     23     40     97     41      1     42     11
   43     32     44     84     45    234     46     33     47     18     48     27     49     65     50     52     51     16
   52     20     55      7     56      5     57     66     58     58     59     27     60     41     61    942     62     50
   63     26     64      2     65      3     66    686     67     29     68     20     69    115     70    246     71     79
   72     38     73      5     74     29     75    425     76    313     77     23     78    238     79    141     80     11
   81    617     82   1886     83     21     84     11     85    423     90     74     96    395     97    755     98   2827
   99   1184    100   5641    101   1568

COMPOSITION OF INPUT, COLUMN  61
  ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT
   12     38     26      6     28      1     29      4     32     22     33     13     34      3     35     15     36      5
   37      1     38      2     40    253     43      4     45     89     46     15     47    220     48     28     50      1
   51    134     52     72     57     89     59     28     61    942     63     39     65      2     66      4     67    264
   72      1     74      1     75     67     76     89     78     26     79      1     80      1     81    283     82    104
   83    187     84      9     85    292     86      5     86     38     89    400     93    122     94   3986     95  12758

 . . . . . . . . . . . . . .   SECTOR  62. SERVICE INDUSTRY MACHINES        TOTAL OUTPUT:    48939. . . . . . . . . . . . . . . . . .

DISTRIBUTION OF OUTPUT, ROW  62
  COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT
   12   1108     45    130     50    261     62   1357     64     15     66     12     69    360     70     11     71    112
   74      4     75      4     85    657     96   4558     97   1293     98     96     99   1386    100  33669    101   3906
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COMPOSITION OF INPUT, COLUMN 62

ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT
7	1	12	138	26	22	28	26	29	177	32	38	33	518	34	9	35	202
37	5	38	162	40	1386	43	71	44	234	45	3731	46	2067	47	924	48	95
50	41	51	1394	52	936	57	370	59	320	61	50	62	1357	63	1136	65	4
68	287	72	140	74	35	75	827	76	257	78	216	79	27	80	10	81	2017
82	239	83	426	84	19	85	1366	86	82	88	163	89	527	90	38	93	1332
94	8284	95	17231														

. . . . SECTOR 63. ELECTRIC APPARATUS & MOTORS TOTAL OUTPUT: 23694. . . . .

DISTRIBUTION OF OUTPUT, ROW 63

COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT
7	4	9	64	12	302	13	76	35	25	45	845	47	33	48	49	50	362
51	5	52	42	55	19	56	52	57	485	58	561	59	160	60	9	61	39
62	1136	63	388	64	20	65	11	66	1286	67	11	68	73	69	26	70	62
71	834	72	114	73	6	74	56	75	104	84	105	85	504	86	75	96	83
97	277	98	900	99	1321	100	11844	101	1323								

COMPOSITION OF INPUT, COLUMN 63

ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT
7	1	9	1	12	52	24	7	26	14	28	4	29	9	32	110	33	65
34	50	35	97	36	49	37	4	38	36	40	400	41	1	43	23	44	167
45	1215	46	387	47	144	48	266	50	24	51	231	52	191	57	363	59	92
60	21	61	26	63	388	65	3	66	26	67	122	68	24	72	7	74	2
75	320	76	145	78	152	79	14	80	6	81	696	82	225	83	285	84	39
85	469	86	53	88	89	89	505	90	30	93	930	94	3234	95	11880		

. . . . SECTOR 64. HOUSEHOLD APPLIANCES TOTAL OUTPUT: 1992. . . . .

DISTRIBUTION OF OUTPUT, ROW 64

COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT
12	55	64	1	71	41	84	54	89	15	96	1370	97	8	98	2	99	20
100	356	101	71														

COMPOSITION OF INPUT, COLUMN 64

ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT
12	2	24	1	26	1	28	1	29	3	32	2	33	48	34	3	35	8
36	7	38	10	40	152	43	4	44	16	45	167	46	6	47	24	48	24
51	62	52	36	57	27	59	7	60	4	61	2	62	15	63	20	64	1
72	9	74	8	75	37	76	7	78	10	79	2	81	71	82	9	83	13
84	2	85	216	86	1	88	3	89	18	90	1	93	77	94	279	95	575

. . . . SECTOR 65. ELECTRIC LIGHT & WIRING EQUIP TOTAL OUTPUT: 2703. . . . .

DISTRIBUTION OF OUTPUT, ROW 65

COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT
3	1	9	1	12	71	37	1	44	8	61	2	62	4	63	3	65	2
66	43	67	2	68	3	69	15	70	2	71	8	72	3	74	2	75	3
78	7	81	11	84	2	86	5	96	307	97	57	98	1	99	90	100	1977
101	69																

COMPOSITION OF INPUT, COLUMN 65

ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT
12	3	26	2	29	1	32	1	33	57	35	9	36	18	38	7	40	102
43	81	44	12	45	142	46	46	47	45	48	30	51	62	52	28	57	28
61	3	63	11	65	2	68	51	75	48	76	11	78	14	79	2	81	111
82	9	83	31	84	2	85	118	86	5	88	7	89	32	90	2	93	118
94	267	95	1183														

. . . . SECTOR 66. COMMUNICATION EQUIPMENT TOTAL OUTPUT: 501176. . . . .

DISTRIBUTION OF OUTPUT, ROW 66

COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT
12	478	13	1051	61	4	63	26	66	30183	67	30	69	759	70	7848	71	57
74	7	75	8	76	3506	77	64	85	43	88	11	89	823	96	51581	97	2011
98	53804	99	249818	100	38691	101	1739	102	58634								

COMPOSITION OF INPUT, COLUMN 66

ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT
7	4	12	449	24	17	26	176	28	19	29	154	30	1610	32	315	33	988
34	1515	35	168	36	1272	37	46	38	27	40	3564	41	2	43	1274	45	1576
46	602	47	665	48	895	51	4860	52	2156	56	3	57	3239	59	108	60	906
61	686	62	12	63	1286	65	43	66	30183	67	20703	68	310	72	17	74	14
75	2311	76	2644	78	1189	79	50	80	55	81	10135	82	1627	83	5376	84	321
85	15223	86	1101	88	1852	89	8887	90	532	93	3101	94	135123	95	231784		

. . . . SECTOR 67. ELECTRONIC COMPONENTS TOTAL OUTPUT: 30696. . . . .

DISTRIBUTION OF OUTPUT, ROW 67

COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT
12	8	13	380	52	7	59	9	61	264	63	122	66	20703	67	497	68	26
69	43	70	388	71	2	72	151	73	1	74	51	75	247	84	1722	88	18
96	864	97	19	98	605	99	3686	100	516	101	367						

COMPOSITION OF INPUT, COLUMN 67

ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT
9	3	12	116	26	30	29	11	32	277	33	213	34	11	35	321	36	110
37	7	38	16	40	965	43	933	44	118	45	469	46	153	47	137	48	192
51	806	52	250	57	361	59	3	61	29	63	11	65	2	66	30	67	497
72	2	74	4	75	330	76	257	78	259	79	13	80	10	81	1371	82	180
83	425	84	69	85	1227	86	70	88	143	89	627	90	38	93	709	94	4381
95	14512																

. . . . SECTOR 68. BATTERIES & ENGINE ELEC EQUIP TOTAL OUTPUT: 17517. . . . .

DISTRIBUTION OF OUTPUT, ROW 68

COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT
1	48	2	161	3	3	7	1	9	37	12	160	13	38	14	4	15	19
16	1	17	1	18	15	19	1	21	14	22	2	24	1	26	2	28	4
30	1	31	1	32	2	33	2	34	9	35	2	36	1	38	1	40	1
43	1	44	15	45	5	46	1	49	2	50	2	55	5	56	10	57	1
59	3	60	109	62	287	63	24	65	51	66	310	68	544	69	1029	70	316
71	103	72	14	74	1	75	983	76	35	78	9	79	3	80	2	81	564
82	17	83	21	84	43	85	323	86	2943	87	4	88	47	96	2293	97	143
98	413	99	1650	100	3920	101	734										

COMPOSITION OF INPUT, COLUMN 68

ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT
9	1	12	11	24	6	26	10	28	1	29	8	32	6	33	178	34	3
35	278	36	43	37	2	38	2	40	728	43	18	44	79	45	468	46	126
47	60	48	550	51	154	52	97	57	223	59	125	61	20	63	73	65	3
67	26	68	544	72	3	74	5	75	200	76	71	78	86	79	8	80	5
81	693	82	61	83	135	84	28	85	450	86	17	88	45	89	249	90	14
93	1550	94	1745	95	8313												

. . . . SECTOR 69. MOTOR VEHICLES TOTAL OUTPUT: 252451. . . . .

DISTRIBUTION OF OUTPUT, ROW 69

COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT
96	198635	97	7517	98	1309	99	7367	100	37623

COMPOSITION OF INPUT, COLUMN 69

ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT
7	6	9	9	12	497	24	28	26	47	27	1656	28	34	29	29	31	1
32	32	33	38	34	10	35	119	36	23	37	12	38	442	40	5970	41	3
43	1959	44	253	45	18832	46	554	47	1414	48	122	50	17	51	4905	52	2562
56	1	57	3348	59	701	60	2323	61	115	62	360	63	26	65	15	66	759
67	43	68	1029	72	225	73	2	74	3	75	3791	76	375	78	638	79	52
80	29	81	4167	82	804	83	512	84	179	85	4272	86	4785	88	168	89	896
90	86	93	61476	94	50379	95	71319										

. . . . SECTOR 70. AIRCRAFT & PARTS TOTAL OUTPUT: 181776. . . . .

DISTRIBUTION OF OUTPUT, ROW 70

COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT
4	2	13	2595	57	3	70	26738	72	4	75	4504	85	3	88	3	96	312
98	58562	99	67699	100	21012	101	338										

COMPOSITION OF INPUT, COLUMN 70

ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT
7	1	12	432	24	79	26	91	28	6	29	33	31	116	32	61	33	91
34	54	35	125	36	70	37	31	38	122	40	957	41	4	43	2	44	276
45	3257	46	38	47	2344	48	1230	51	1834	52	1057	56	2	57	5124	59	484
60	8132	61	246	62	11	63	62	65	2	66	7848	67	388	68	316	70	26738
72	761	73	36	74	8	75	2348	76	1649	78	883	79	45	80	56	81	4144
82	722	83	755	84	1170	85	8556	86	487	88	912	89	527	90	132	93	3762
94	18934	95	74224														

. . . . SECTOR 71. SHIPS, TRAINS, TRAILRS, CYCLES TOTAL OUTPUT: 179880. . . . .

DISTRIBUTION OF OUTPUT, ROW 71

COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT
1	3	2	113	3	114	6	8	7	42	9	10	12	5	71	26250	75	7211
84	265	85	611	96	24208	97	647	98	5158	99	22299	100	27244	102	65692		

COMPOSITION OF INPUT, COLUMN 71

ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT
7	5	12	316	24	20	26	108	27	549	28	1258	29	8	30	291	31	37
32	287	33	28	34	21	35	89	36	251	37	21	38	346	40	2847	41	5
43	797	44	479	45	20876	46	540	47	2329	48	327	50	2891	51	722	52	1732
55	25	56	5	57	691	59	3693	60	991	61	79	62	112	63	834	64	41
65	8	66	57	67	2	68	103	71	26250	72	18	74	42	75	3159	76	503
78	766	79	62	80	32	81	4601	82	961	83	1511	84	212	85	4216	86	269
88	278	89	1697	90	150	93	7687	94	25413	95	58231						

. . . . SECTOR 72. INSTRUMENTS & CLOCKS TOTAL OUTPUT: 34246. . . . .

DISTRIBUTION OF OUTPUT, ROW 72

COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT
12	324	13	18	14	5	15	2	16	4	17	1	18	3	19	1	21	3
22	2	24	3	26	22	27	2	28	4	29	1	30	3	31	1	32	3
33	5	34	13	35	2	36	1	37	9	38	1	40	8	42	2	43	4
44	12	45	113	46	2	47	3	48	2	49	6	50	127	51	2	52	3
57	4	58	28	59	41	60	2	61	1	62	140	63	7	64	9	66	17
67	2	68	3	69	225	70	761	71	18	72	554	74	4	75	14	84	7
85	3	88	829	89	32	96	2951	97	596	98	1078	99	20844	100	5342	101	15

COMPOSITION OF INPUT, COLUMN 72

ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT
2	33	9	2	12	94	14	32	24	225	26	27	28	6	29	19	32	57
33	195	34	15	35	77	36	54	37	5	38	15	40	871	42	5	43	132
44	55	45	844	46	392	47	191	48	145	49	112	51	456	52	238	57	494
59	46	61	38	63	114	65	3	67	151	68	14	70	4	72	554	73	6
74	35	75	252	76	354	78	147	79	10	80	8	81	1285	82	280	83	516
84	81	85	2669	86	66	88	144	89	862	90	54	93	648	94	4651	95	16458

. . . . SECTOR 73. OPTICAL & PHOTOGRAPHIC EQUIP TOTAL OUTPUT: 4626. . . . .

DISTRIBUTION OF OUTPUT, ROW 73

COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT
13	2	26	1	34	95	45	1	50	2	69	2	70	36	72	6	73	8
74	2	75	1	77	1	82	1	84	88	85	257	87	74	88	54	89	12
90	17	96	1502	97	132	98	232	99	1643	100	453						

COMPOSITION OF INPUT, COLUMN 73

ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT
7	1	12	12	24	1	26	2	32	84	33	35	34	1	35	220	36	11
40	95	42	2	43	55	44	6	45	52	46	1	47	25	48	30	51	14
52	13	60	3	61	5	63	6	67	1	73	8	75	54	76	38	78	17
79	1	80	1	81	134	82	24	83	67	84	12	85	263	86	6	88	16
89	44	90	3	93	134	94	490	95	2640								

TABLE C.2:

INTERINDUSTRY TRANSACTIONS, 1966 (THOUSANDS OF DOLLARS)
STATE OF MARYLAND

. . . . SECTOR 74. MISC MANUFACTURED PRODUCTS TOTAL OUTPUT: 54820. . . . .

DISTRIBUTION OF OUTPUT, ROW 74

COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT
1	9	2	8	6	1	9	1	12	615	13	2	14	4	15	3	16	3
17	1	18	3	21	4	22	2	24	2	26	1691	27	15	28	3	29	1
30	5	31	1	32	3	33	4	34	126	35	2	36	1	37	1	38	1
40	83	42	137	43	50	44	155	45	408	46	1	47	1	48	56	49	4
50	6	51	2	52	38	57	6	58	3	59	1	60	2	61	1	62	35
63	2	64	8	66	14	67	4	68	5	69	3	70	8	71	42	72	35
74	1567	75	8	81	220	84	1447	85	87	87	187	88	282	89	274	90	2221
96	38840	97	1059	98	-15	99	181	100	4844								

COMPOSITION OF INPUT, COLUMN 74

ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT
2	79	3	3	7	1	9	8	12	179	22	23	24	342	26	66	27	1
28	256	29	22	30	36	32	712	33	1121	34	30	35	238	36	1037	37	11
38	200	40	2685	41	38	42	33	43	332	44	120	45	1755	46	656	47	286
48	383	50	1	51	395	52	409	56	1	59	1	61	29	62	4	63	56
65	2	66	7	67	51	68	1	72	4	73	2	74	1567	75	848	76	346
78	276	79	15	80	6	81	1960	82	375	83	1042	84	134	85	3423	86	83
88	164	89	679	90	41	93	3119	94	6966	95	22160						

. . . . SECTOR 75. TRANSPORTATION TOTAL OUTPUT: 848265. . . . .

DISTRIBUTION OF OUTPUT, ROW 75

COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT
1	10023	2	3800	3	34	4	1295	6	47	7	118	9	893	12	14744	13	230
14	11140	15	1293	16	5999	17	4107	18	2120	19	2212	20	343	21	5911	22	6554
24	1255	26	1916	27	350	28	2080	29	683	30	929	31	514	32	5101	33	3863
34	3612	35	4056	36	1585	37	1747	38	1129	39	2070	40	4301	41	27	42	292
43	1806	44	17502	45	35376	46	2530	47	890	48	1594	49	5458	50	3464	51	830
52	906	55	135	56	113	57	761	58	942	59	374	60	379	61	67	62	827
63	320	64	37	65	48	66	2311	67	330	68	200	69	3791	70	2348	71	3159
72	252	73	54	74	848	75	76512	76	379	77	11	78	11867	79	3806	80	81
81	19097	82	795	83	2864	84	1984	85	18787	86	2319	87	342	88	3085	89	55245
96	224553	97	11322	98	53922	99	45965	100	23925	101	97376						

COMPOSITION OF INPUT, COLUMN 75

ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT
1	27	2	133	7	8	12	27053	14	299	15	169	16	539	17	38	18	153
19	8	21	330	22	294	26	134	28	11	32	119	33	177	34	1069	35	420
37	77	38	34	40	4045	43	59	44	98	45	3475	46	17	47	37	48	73
51	86	52	779	56	2	57	394	59	120	60	202	61	425	62	4	63	104
65	3	66	8	67	247	68	983	70	4504	71	7211	72	14	73	1	74	8
75	76512	76	8059	78	2556	79	389	80	316	81	22785	82	14755	83	20509	84	733
85	23359	86	22142	88	3409	89	3452	90	1052	93	16475	94	47443	95	530330		

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. . . . . . . . . . . . . .   SECTOR  76. COMMUNICATION                  TOTAL OUTPUT:    301803. . . . . . . . . . . . . . . .

DISTRIBUTION OF OUTPUT, ROW  76
  COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT
    1     806     2    1011     6       4     7       9     9       8    12    2297    13     371    14     363    15     650
   16     156    17      78    18     575    19      40    20      23    21    1004    22     262    24     148    26    1253
   27     183    28     214    29      45    30     185    31     164    32     391    33     534    34    3317    35     554
   36     296    37     486    38     276    39      32    40     778    41       5    42     120    43     279    44    1499
   45    3381    46     273    47     166    48     335    49     307    50    1231    51     303    52     303    55      40
   56      40    57     505    58     465    59     213    60     158    61      89    62     257    63     145    64       7
   65      11    66    2644    67     257    68      71    69     375    70    1649    71     503    72     354    73      38
   74     346    75    8059    76    2026    77     910    78    1185    79     505    80      92    81   26985    82   14480
   83    3549    84    2244    85    8650    86    1847    87    1021    88    8275    96  128511    97    7032    98    1744
   99   10404   100   21339   102   20059

COMPOSITION OF INPUT, COLUMN  76
  ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT
   12    9646    26      43    32      98    34      16    35      18    40     301    44       1    48      41    60      15
   61     313    66    3506    68      35    75     379    76    2026    78    2051    79     169    80      95    81    3061
   82    2487    83    5842    84     171    85    8363    86    3999    87      81    88     892    89    1262    90    1012
   93     827    94    2357    95  252693

. . . . . . . . . . . . . .   SECTOR  77. RADIO, TV BROADCASTING         TOTAL OUTPUT:     31763. . . . . . . . . . . . . . . .

DISTRIBUTION OF OUTPUT, ROW  77
  COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT
   77      78    85   31232    88     241    97     212

COMPOSITION OF INPUT, COLUMN  77
  ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT
   32       1    34       9    40       5    61      23    66      64    73       1    75      11    76     910    77      78
   78     141    79      11    80       6    81     410    82     226    83     535    85    1232    86       9    87   10413
   88      57    89     567    90      33    93       3    94     133    95   16887

. . . . . . . . . . . . . .   SECTOR  78. ELECTRIC UTILITY               TOTAL OUTPUT:    322616. . . . . . . . . . . . . . . .

DISTRIBUTION OF OUTPUT, ROW  78
  COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT
    1    1236     2     807     3       1     4      27     6      68     7     145     9    2150    12    1626    13     173
   14     791    15     854    16     442    17     279    18     424    19      58    20      45    21     627    22     754
   24     612    26     865    27     129    28     473    29      94    30     183    31     132    32    1514    33     527
   34    1212    35    2227    36     472    37     233    38     144    39     138    40    2118    41      13    42      86
   43     960    44    3943    45   10139    46     635    47     380    48     547    49     868    50     930    51     342
   52     463    55      51    56      24    57     550    58     385    59     195    60     227    61      26    62     216
   63     152    64      10    65      14    66    1189    67     259    68      86    69     638    70     883    71     766
   72     147    73      17    74     276    75    2556    76    2051    77     141    78   21631    79     166    80     181
   81   29444    82    6655    83    2965    84    2064    85    5903    86    1316    87    1162    88   12763    96  129623
   97   18209    98   -4027    99    9689   100    3033   102   30096

COMPOSITION OF INPUT, COLUMN  78
  ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT
    7    1198    12   17163    26      50    32      73    34      35    35     124    40      64    48      35    60       1
   61     238    65       7    68       9    75   11867    76    1185    78   21631    79    4338    80     254    81    2285
   82    3243    83    1937    85   10963    86     827    88     369    89    1023    90     284    93     918    94   18337
   95  224156
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. . . . . . . . . . . . . .   SECTOR  79. GAS UTILITY                    TOTAL OUTPUT:   123258. . . . . . . . . . . . . . . . . .

DISTRIBUTION OF OUTPUT, ROW   79
 COL.  AMOUNT   COL.  AMOUNT   COL.  AMOUNT   COL.  AMOUNT   COL.  AMOUNT   COL.  AMOUNT   COL.  AMOUNT   COL.  AMOUNT   COL.  AMOUNT
   1       63      2      33      6       4      9     161     12     125     13      17     14     110     15     118     16     105
  17       32     18     137     19     127     20       4     21     125     22     150     24      37     26      41     27       6
  28       38     29       3     30       5     31      16     32     307     33      54     34      68     35     966     36      83
  37       14     38      11     39     125     40     121     41       1     42       2     43     823     44    1619     45    2843
  46      110     47     116     48      82     49     210     50     118     51      40     52      63     55       4     56       2
  57       48     58      31     59      26     60      15     61       1     62      27     63      14     64       2     65       2
  66       50     67      13     68       8     69      52     70      45     71      62     72      10     73       1     74      15
  75      389     76     169     77      11     78    4338     79   28838     80     100     81    2414     82     545     83     236
  84      292     85     589     86     107     87      82     88     899     96   67912     97    3008     98     555     99    2398
 100      530    102     183

COMPOSITION OF INPUT, COLUMN  79
 ROW   AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT
   7        4     12    5001     26      13     32      49     34       8     40      20     60       3     61     141     68       3
  75     3806     76     505     78     166     79   28838     80      12     81    1110     82    1227     83    1771     85    5446
  86      446     88     202     89     191     90      54     93    5053     94   28439     95   40749

. . . . . . . . . . . . . .   SECTOR  80. WATER UTILITY                  TOTAL OUTPUT:    18467. . . . . . . . . . . . . . . . . .

DISTRIBUTION OF OUTPUT, ROW   80
 COL.  AMOUNT   COL.  AMOUNT   COL.  AMOUNT   COL.  AMOUNT   COL.  AMOUNT   COL.  AMOUNT   COL.  AMOUNT   COL.  AMOUNT   COL.  AMOUNT
   1        4      2     396      6       2      7       1      9      88     12     140     13       5     14      60     15      25
  16       41     17       4     18       8     19      18     20       1     21      69     22      38     24      15     26      28
  27       11     28       8     29       1     30       4     31       3     32     154     33       9     34      30     35      95
  36       29     37       7     38       7     39      12     40      52     41       1     42       3     43      33     44     171
  45      280     46      39     47       8     48      22     49      18     50      25     51      13     52      12     55       1
  57       15     58       9     59       7     60       5     61       1     62      10     63       6     66      55     67      10
  68        5     69      29     70      56     71      32     72       8     73       1     74       6     75     316     76      95
  77        6     78     254     79      12     80       1     81    1454     82     391     83     165     84     240     85     584
  86       49     87      50     88     841     96   10237     97    -985     98     222     99     377    100    1908

COMPOSITION OF INPUT, COLUMN  80
 ROW   AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT    ROW  AMOUNT
   7        2     12    5207     26       3     32       5     34       1     35     193     40      10     61      11     68       2
  75       81     76      92     78     181     79     100     80       1     81     168     82     340     83      83     85     222
  86      241     88      27     90     407     93      82     94     389     95   10619

. . . . . . . . . . . . . .   SECTOR  81. WHOLESALE & RETAIL TRADE       TOTAL OUTPUT:  2734451. . . . . . . . . . . . . . . . . .

DISTRIBUTION OF OUTPUT, ROW   81
 COL.  AMOUNT   COL.  AMOUNT   COL.  AMOUNT   COL.  AMOUNT   COL.  AMOUNT   COL.  AMOUNT   COL.  AMOUNT   COL.  AMOUNT   COL.  AMOUNT
   1    14199      2   11428      3     174      4    1325      6      42      7     116      9    2245     12   68084     13     551
  14     4619     15    3264     16    4739     17    2618     18    2332     19     847     20     334     21    4724     22    3371
  24     1382     26    7429     27    1799     28    1268     29     292     30    1213     31     725     32    3060     33    1790
  34     6990     35    3134     36    1661     37    3121     38    2199     39     461     40    5562     41      45     42     673
  43     2126     44    5930     45   15038     46    3043     47     817     48    2182     49    4800     50    4797     51     974
  52     1637     55     272     56     205     57    2249     58    2434     59     887     60     839     61     283     62    2017
  63      696     64      71     65     111     66   10135     67    1371     68     693     69    4167     70    4144     71    4601
  72     1285     73     134     74    1960     75   22785     76    3061     77     410     78    2285     79    1110     80     168
  81    47649     82    8579     83   15070     84    7605     85   27169     86   32092     87    3646     88   14349     89    7909
  96  1842528     97    1901     98    6970     99   34837    100  320963    101   34529    102   51126
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TABLE C.2:                      INTERINDUSTRY TRANSACTIONS, 1966 (THOUSANDS OF DOLLARS)                       PAGE:  70
                                              STATE OF MARYLAND

COMPOSITION OF INPUT, COLUMN  81
  ROW  AMOUNT    ROW  AMOUNT   ROW   AMOUNT   ROW   AMOUNT   ROW   AMOUNT   ROW   AMOUNT   ROW   AMOUNT   ROW   AMOUNT
    4    3607     12    9410    17       23    22       80    26       83    27       88    28       30    29      762    32     8432
   33   10655     34    2519    35      204    36      429    37      916    38       23    40     4583    42       18    43      592
   44     279     51     313    52      275    57       68    60       64    61      617    65       11    68      564    74      220
   75   19097     76   20985    78    29444    79     2414    80     1454    81    47649    82    42765    83   156333    84    10293
   85  153572     86   38760    87     3457    88     8990    89    42931    90     5961    93     5855    94    36568    95  2057059

 . . . . . . . . . . . . .  SECTOR  82. FINANCE & INSURANCE          TOTAL OUTPUT:   637803. . . . . . . . . . . . . . . .

DISTRIBUTION OF OUTPUT, ROW   82
 COL. AMOUNT    COL. AMOUNT   COL.  AMOUNT   COL.  AMOUNT   COL.  AMOUNT   COL.  AMOUNT   COL.  AMOUNT   COL.  AMOUNT   COL.  AMOUNT
    1    2381      2    3635     3        4     4      230     6       60     7       74     9     1510    12     5189    13      267
   14     864     15    1481    16      400    17      214    18      494    19      200    20       49    21     1968    22      597
   24     254     26    1639    27      305    28      649    29       69    30      369    31      441    32      694    33      371
   34    2341     35     850    36      388    37      684    38      273    39      427    40     1196    41       16    42      181
   43     817     44    2368    45     6897    46      357    47      248    48      379    49     1628    50     1148    51      443
   52     530     55     114    56       50    57      740    58      669    59      199    60      446    61      104    62      239
   63     225     64       9    65        9    66     1627    67      180    68       61    69      804    70      722    71      961
   72     280     73      24    74      375    75    14755    76     2487    77      226    78     3243    79     1227    80      340
   81   42765     82  109422    83    58683    84     4120    85     4517    86     4794    87     2165    88     4200    96   319671
   97    5845     98    1234    99      691   100     3999

COMPOSITION OF INPUT, COLUMN  82
  ROW  AMOUNT    ROW  AMOUNT   ROW   AMOUNT   ROW   AMOUNT   ROW   AMOUNT   ROW   AMOUNT   ROW   AMOUNT   ROW   AMOUNT   ROW   AMOUNT
   12    1919     32    1935    34     5659    35        8    40      133    60        4    61     1886    68       17    73        1
   75     795     76   14480    78     6655    79      545    80      391    81     8579    82   109422    83    30803    85    70042
   86    2421     87      18    88    20945    89     8157    90     3132    93     1260    94    12838    95   335755

 . . . . . . . . . . . . .  SECTOR  83. REAL ESTATE & RENTAL         TOTAL OUTPUT:  2956524. . . . . . . . . . . . . . . .

DISTRIBUTION OF OUTPUT, ROW   83
 COL. AMOUNT    COL. AMOUNT   COL.  AMOUNT   COL.  AMOUNT   COL.  AMOUNT   COL.  AMOUNT   COL.  AMOUNT   COL.  AMOUNT   COL.  AMOUNT
    1    5338      2   26626     4     1847     6      105     7      207     9     2606    12     4633    13      225    14      660
   15    1193     16     618    17      145    18      816    19      271    20       94    21     1512    22      790    24      349
   26    4369     27     502    28      732    29      140    30     1001    31      565    32      941    33     1191    34    19578
   35     896     36     515    37     1077    38      386    39      912    40     2218    41       33    42      241    43      959
   44    1801     45    1564    46      221    47      151    48      656    49     1597    50     2426    51      687    52      853
   55      57     56      76    57      944    58     2918    59      289    60      719    61      187    62      426    63      285
   64      13     65      31    66     5376    67      425    68      135    69      512    70      755    71     1511    72      516
   73      67     74    1042    75    20509    76     5842    77      535    78     1937    79     1771    80       83    81   156333
   82   30803     83  112742    84    17376    85    34623    86     9382    87    16462    88    63433    96  1889243    97     9277
   98    6965     99    9641   100     1447   102   457589

COMPOSITION OF INPUT, COLUMN  83
  ROW  AMOUNT    ROW  AMOUNT   ROW   AMOUNT   ROW   AMOUNT   ROW   AMOUNT   ROW   AMOUNT   ROW   AMOUNT   ROW   AMOUNT   ROW   AMOUNT
    2     841      4     331     9       26    12   273700    32       57    34       13    35     4074    40     1631    44        3
   50     312     60       2    61       21    68       21    75     2864    76     3549    78     2965    79      236    80      165
   81   15070     82   58683    83   112742    85    49865    86     2603    88     2113    89     2690    90     1331    93      940
   94    6275     95 2413401
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. . . . SECTOR 84. HOTELS, PERSONAL & REPAIR SVC TOTAL OUTPUT: 300714. . . . .

DISTRIBUTION OF OUTPUT, ROW 84

COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT
13	113	14	1315	15	918	16	321	17	86	18	1145	19	30	20	80	21	811
22	321	24	32	26	103	27	89	29	16	30	29	31	27	32	351	33	360
34	1064	35	156	36	67	37	813	38	287	39	32	40	531	42	19	43	152
44	246	45	620	46	143	48	30	49	144	50	1310	51	68	52	76	55	14
56	10	57	195	58	126	59	52	60	63	61	9	62	19	63	39	64	2
65	2	66	321	67	69	68	28	69	179	70	1170	71	212	72	81	73	12
74	134	75	733	76	171	81	10293	84	13269	86	414	87	259	88	5922	89	25389
96	218988	97	2744	98	3540	99	4351										

COMPOSITION OF INPUT, COLUMN 84

ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT
7	1	9	22	12	3142	17	9	24	247	26	525	27	923	32	447	33	380
34	128	35	564	37	4674	38	49	40	1008	41	86	42	536	43	6	44	738
48	26	52	317	60	27	61	11	63	105	64	54	65	2	67	1722	68	43
71	265	72	7	73	88	74	1447	75	1984	76	2244	78	2064	79	292	80	240
81	7605	82	4120	83	17376	84	13269	85	11610	86	4119	87	71	88	2662	89	3409
90	418	93	1640	94	25515	95	184475										

. . . . SECTOR 85. BUSINESS SERVICES TOTAL OUTPUT: 941892. . . . .

DISTRIBUTION OF OUTPUT, ROW 85

COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT
1	3305	2	14630	3	89	4	796	6	49	7	114	9	1779	12	16634	13	846
14	3224	15	3444	16	6874	17	2668	18	2135	19	346	20	675	21	20086	22	7516
24	961	26	6278	27	708	28	1514	29	244	30	1273	31	811	32	3206	33	2384
34	14113	35	3119	36	3027	37	23258	38	2107	39	1275	40	8188	41	34	42	990
43	3563	44	8668	45	14642	46	684	47	748	48	1148	49	6365	50	5050	51	1208
52	1946	55	211	56	151	57	2881	58	1956	59	995	60	1470	61	292	62	1366
63	469	64	216	65	118	66	15223	67	1227	68	450	69	4272	70	8556	71	4216
72	2669	73	263	74	3423	75	23359	76	8363	77	1232	78	10963	79	5446	80	222
81	153572	82	70042	83	49865	84	11610	85	49768	86	5014	87	11303	88	20028	96	67606
97	19480	98	18912	99	19164	100	20711	102	122081								

COMPOSITION OF INPUT, COLUMN 85

ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT
12	647	16	1834	24	22	33	265	34	117531	35	1220	37	3203	38	92	40	184
44	99	45	10	48	9	50	1	51	2	52	49	55	24	57	422	59	2
60	42	61	423	62	657	63	504	66	43	68	323	70	3	71	611	72	3
73	257	74	87	75	18787	76	8650	77	31232	78	5903	79	589	80	584	81	27169
82	4517	83	34623	85	49768	86	7329	87	3198	88	5306	89	8742	90	9626	93	1208
94	57486	95	538607														

SECTOR 86. AUTOMOBILE REPAIR SERVICES TOTAL OUTPUT: 286557.

DISTRIBUTION OF OUTPUT, ROW 86

COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT
1	2242	2	3643	3	48	4	63	6	9	7	35	9	1792	12	5565	13	117
14	382	15	1654	16	102	17	84	18	1210	19	51	20	11	21	1290	22	210
24	47	26	330	27	45	28	433	29	41	30	91	31	87	32	173	33	200
34	1099	35	204	36	70	37	63	38	58	39	23	40	265	41	2	42	32
43	168	44	1406	45	1001	46	76	47	41	48	79	49	193	50	319	51	57
52	105	55	15	56	15	57	165	58	143	59	65	60	65	61	5	62	82
63	53	64	1	65	5	66	1101	67	70	68	17	69	4785	70	487	71	269
72	66	73	6	74	83	75	22142	76	3999	77	9	78	827	79	406	80	241
81	38760	82	2421	83	2603	84	4119	85	7329	86	1857	87	657	88	5862	96	117079
97	1937	98	1241	99	535	100	11843	102	29442								

COMPOSITION OF INPUT, COLUMN 86

ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT
12	690	26	72	27	122	32	44	34	5	35	73	38	743	40	6243	43	1740
44	1623	51	1913	52	828	57	30	60	2960	63	75	65	5	68	2943	75	2319
76	1847	78	1316	79	107	80	49	81	32092	82	4794	83	9382	84	414	85	5014
86	1857	88	558	89	960	90	107	93	18003	94	20062	95	167564				

SECTOR 87. AMUSEMENTS & RECREATION TOTAL OUTPUT: 197627.

DISTRIBUTION OF OUTPUT, ROW 87

COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT
76	81	77	10413	81	3457	82	18	84	71	85	3198	87	49095	88	1147	89	2259
96	113715	97	-1183	98	-90	99	1484	102	13965								

COMPOSITION OF INPUT, COLUMN 87

ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT
1	319	12	1796	32	12	34	1088	35	848	40	33	42	18	60	4	68	4
73	74	74	187	75	342	76	1021	78	1162	79	82	80	50	81	3646	82	2165
83	16462	84	259	85	11303	86	657	87	49095	88	1280	89	2744	90	212	93	1425
94	3152	95	98186														

SECTOR 88. MEDICAL & EDUCATIONAL INSTIT TOTAL OUTPUT: 797905.

DISTRIBUTION OF OUTPUT, ROW 88

COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT
1	10708	2	520	6	8	7	18	9	63	12	2575	13	181	14	228	15	424
16	93	17	48	18	344	19	23	20	14	21	542	22	169	24	55	26	579
27	79	28	110	29	22	30	83	31	88	32	180	33	206	34	1887	35	218
36	103	37	197	38	103	39	15	40	467	41	3	42	50	43	154	44	666
45	949	46	71	47	44	48	88	49	165	50	452	51	112	52	156	55	24
56	24	57	294	58	301	59	127	60	126	61	38	62	163	63	89	64	3
65	7	66	1852	67	143	68	45	69	168	70	912	71	278	72	144	73	16
74	164	75	3409	76	892	77	57	78	369	79	202	80	27	81	8990	82	20945
83	2113	84	2662	85	5306	86	558	87	1280	88	21596	89	1748	96	637645	97	14982
98	21196	99	23918	100	1832												

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TABLE C.2:                    INTERINDUSTRY TRANSACTIONS, 1966 (THOUSANDS OF DOLLARS)
                                        STATE OF MARYLAND


COMPOSITION OF INPUT, COLUMN  88
  ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT
    1      88     2     629     4       2     7      17    12   16035    14     584    15     348    16    1281    17     189
   18     555    19      23    21      11    22     237    26      25    27     220    32     602    33      31    34    9556
   35     601    37   12552    40     882    43      79    44      33    51      29    52      14    60      25    66      11
   67      18    68      47    70       3    72     829    73      54    74     282    75    3085    76    8275    77     241
   78   12763    79     899    80     841    81   14349    82    4200    83   63433    84    5922    85   20028    86    5562
   87    1147    88   21596    89   13980    90    2833    93     901    94   21112    95  550846

 . . . . . . . . . . . . .   SECTOR  89. BUSINESS TRAVEL, ENTERTAINMENT   TOTAL OUTPUT:   149415. . . . . . . . . . . . . . . . . . .

DISTRIBUTION OF OUTPUT, ROW  89
  COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT
    1     153     2     292     3       4     4      42     6      15     7      19     9     374    12    1060    13     782
   14     547    15     520    16     488    17     199    18     582    19     151    20      49    21    2517    22     418
   24     213    26    1690    27     305    28     407    29      87    30     257    31     253    32     603    33     615
   34    5943    35    2074    36      51    37     705    38     441    39      35    40    1600    41       8    42     140
   43     674    44    2044    45    2294    46     473    47     244    48     292    49     551    50    1181    51     453
   52     641    55      79    56      79    57    1027    58    1004    59     428    60     403    61     400    62     527
   63     505    64      18    65      32    66    8887    67     627    68     249    69     896    70     527    71    1697
   72     862    73      44    74     679    75    3452    76    1262    77     567    78    1023    79     191    81   42931
   82    8157    83    2690    84    3409    85    8742    86     960    87    2744    88   13980    89    1515    97      16
   98    1264    99      86   100    6488

COMPOSITION OF INPUT, COLUMN  89
  ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT
    1     537     2    1512     3      50    14    2407    15    1457    16     328    17     425    18    1106    19     575
   21   21543    22    2003    26     113    28       8    32      37    34      93    37     553    40      44    42     114
   43      43    44      34    52      34    64      15    66     823    72      32    73      12    74     274    75   55245
   81    7909    84   25369    87    2259    88    1748    89    1515    93    1331    94   21178

 . . . . . . . . . . . . .   SECTOR  90. OFFICE SUPPLIES                  TOTAL OUTPUT:    42269. . . . . . . . . . . . . . . . . . .

DISTRIBUTION OF OUTPUT, ROW  90
  COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT   COL. AMOUNT
    2      18     3       2     4       4     6       1     7       1     9      17    12      68    13      40    14      46
   15      66    16      64    18      35    19      23    20       8    22     105    24      26    26     183    27      26
   28      21    29       4    30      24    31      24    32      51    33      60    34     845    35     115    36       1
   37      45    38      34    39       9    40     138    41       1    42      21    43      59    44     133    45     255
   46      44    47      12    48      39    49      42    50      69    51      34    52      47    55       6    56       6
   57      75    58      74    59      31    60      29    62      38    63      30    64       1    65       2    66     532
   67      38    68      14    69      86    70     132    71     150    72      54    73       3    74      41    75    1052
   76    1012    77      33    78     284    79      54    80     407    81    5961    82    3132    83    1331    84     418
   85    9626    86     107    87     212    88    2833    97    7498    98    3219    99     467   100     421

COMPOSITION OF INPUT, COLUMN  90
  ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT   ROW  AMOUNT
   32    6538    34   19407    35     211    40     376    43      19    45      70    52      66    61      74    73      17
   74    2221    93    1331    94   11937
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TABLE C.2:                    INTERINDUSTRY TRANSACTIONS, 1966 (THOUSANDS OF DOLLARS)                                  PAGE:  74
                                                  STATE OF MARYLAND

 . . . . . . . . . . . . . .  SECTOR  91. 'GOVERNMENT INDUSTRY'         TOTAL OUTPUT:  1678582. . . . . . . . . . . . . . . .

DISTRIBUTION OF OUTPUT, ROW  91
  COL. AMOUNT    COL. AMOUNT    COL. AMOUNT
   97  811163     98  444292     99  423127

COMPOSITION OF INPUT, COLUMN  91
  ROW  AMOUNT
   95 1678582

 . . . . . . . . . . . . . .  SECTOR  92. 'DOMESTIC SERVICE INDUSTRY'     TOTAL OUTPUT:   147918. . . . . . . . . . . . . . . .

DISTRIBUTION OF OUTPUT, ROW  92
  COL. AMOUNT
   96  147918

COMPOSITION OF INPUT, COLUMN  92
  ROW  AMOUNT
   95  147918

 . . . . . . . . . . . . . .  PAYMENTS SECTOR 93. FOREIGN IMPORTS                  TOTAL    525932. . . . . . . . . . . . . . .

DISTRIBUTION OF ROW  93
  COL. AMOUNT    COL. AMOUNT    COL. AMOUNT    COL. AMOUNT    COL. AMOUNT    COL. AMOUNT    COL. AMOUNT    COL. AMOUNT    COL. AMOUNT
    1     779      2    6372      3      76      4      85      6      22      7      44      9    1145     12   11062     13     989
   14     237     15     905     16    2151     17     426     18    1774     19    7642     20     975     21    4225     22    8965
   24    1233     26    4317     27     677     28    4724     29     446     30     784     31     373     32    2204     33     811
   34    1779     35    7953     36    2184     37    1228     38    1426     39    3160     40    3962     41     116     42     947
   43    1516     44    6872     45   42517     46   15970     47    2847     48   13020     49    1226     50    2295     51     990
   52    1707     55      44     56      50     57    1065     58     907     59     613     60     429     61     122     62    1332
   63     930     64      77     65     118     66    3101     67     709     68    1550     69   61476     70    3762     71    7687
   72     648     73     134     74    3119     75   16475     76     827     77       3     78     918     79    5053     80      82
   81    5855     82    1260     83     940     84    1640     85    1208     86   18003     87    1425     88     901     89    1331
   90    1331     96   95707     97    1529     98   41918    100    5610    101 -525932    102   60699

 . . . . . . . . . . . . . .  PAYMENTS SECTOR 94. REGIONAL IMPORTS                 TOTAL   3376306. . . . . . . . . . . . . . .

DISTRIBUTION OF ROW  94
  COL. AMOUNT    COL. AMOUNT    COL. AMOUNT    COL. AMOUNT    COL. AMOUNT    COL. AMOUNT    COL. AMOUNT    COL. AMOUNT    COL. AMOUNT
    1   39712      2   19260      3     309      4    2957      6     805      7    1054      9    6356     12   44437     13    4682
   14   13760     15   10557     16   10154     17    8321     18   12300     19    1062     20    1150     21    5864     22    9744
   24   18489     26   76836     27   12849     28   15283     29    2096     30    6144     31    2417     32   20286     33   19341
   34   34086     35   12532     36    8215     37    8375     38    5048     39   16925     40   22595     41     330     42    3533
   43    3504     44   14224     45   37650     46   17333     47    5499     48    7618     49    5906     50    9155     51    1792
   52    3035     55    1033     56     781     57    4889     58    7025     59    3146     60     943     61    3986     62    8284
   63    3234     64     279     65     267     66  135123     67    4381     68    1745     69   50379     70   18934     71   25413
   72    4651     73     490     74    6966     75   47443     76    2357     77     133     78   18337     79   28439     80     389
   81   36568     82   12838     83    6275     84   25515     85   57486     86   20062     87    3152     88   21112     89   21178
   90   11937     96 1462396     97   36530     98  122853    100  467185    101  108592    102-3376306
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INTERINDUSTRY TRANSACTIONS, 1966 (THOUSANDS OF DOLLARS)
STATE OF MARYLAND

. . . . PAYMENTS SECTOR 95. VALUE ADDED TOTAL 12667480. . . . .

DISTRIBUTION OF ROW 95

COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT	COL.	AMOUNT
1	63904	2	149073	3	2353	4	22012	6	1426	7	2892	9	48384	11	596307	12	274797
13	18170	14	21622	15	26443	16	24054	17	7946	18	32374	19	11837	20	2762	21	137759
22	23253	24	16031	26	97774	27	12076	28	22599	29	3829	30	12454	31	11323	32	47788
33	39255	34	113538	35	54073	36	23277	37	45817	38	12306	39	7636	40	93347	41	1455
42	9767	43	51423	44	107939	45	265624	46	37715	47	19155	48	26677	49	52369	50	56919
51	22054	52	27836	55	3205	56	2272	57	44255	58	30922	59	15580	60	20731	61	12758
62	17231	63	11880	64	575	65	1183	66	231784	67	14512	68	8313	69	71319	70	74224
71	58231	72	16458	73	2640	74	22160	75	530330	76	252693	77	16887	78	224156	79	40749
80	10619	81	2057059	82	335755	83	2413401	84	184475	85	538607	86	167564	87	98186	88	550846
91	1678582	92	147918														

. . . . FINAL DEMAND SECTOR 96. PERSONAL CONSUMPTION EXPEND TOTAL 9261532. . . . .

COMPOSITION OF COLUMN 96

ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT
1	42227	2	61458	3	2485	7	436	9	285	13	1032	14	222840	15	103626	16	83735
17	17527	18	69848	19	17612	20	8367	21	203902	22	80286	24	8615	26	245710	27	25662
28	1966	30	22297	31	2446	32	11050	33	1034	34	62180	35	2684	36	238	37	65403
38	217	39	28903	40	26438	42	21119	43	2333	44	3962	45	617	47	147	48	134
50	1059	51	5145	52	3031	57	883	58	561	61	395	62	4558	63	83	64	1370
65	307	66	51581	67	864	68	2293	69	198635	70	312	71	24208	72	2951	73	1502
74	38840	75	224553	76	128511	78	129623	79	67912	80	10237	81	1842528	82	319671	83	1889243
84	216988	85	67606	86	117879	87	113715	88	637645	92	147918	93	95707	94	1462396		

. . . . FINAL DEMAND SECTOR 97. STATE AND LOCAL GOVERNMENT TOTAL 1075580. . . . .

COMPOSITION OF COLUMN 97

ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT
1	225	2	1648	3	35	4	-615	7	30	9	-645	12	74734	13	11	14	1738
15	1644	16	692	17	172	18	420	19	78	21	178	22	448	24	94	26	1109
27	142	28	30	30	143	31	2604	32	686	33	1272	34	8224	35	3511	36	2
37	4693	38	46	39	1051	40	2327	42	6	43	825	44	430	45	55	46	1
48	1	50	3	51	159	52	85	55	111	56	5	57	502	58	162	59	129
60	1347	61	755	62	1293	63	277	64	8	65	57	66	2011	67	19	68	143
69	7517	71	647	72	596	73	132	74	1059	75	11322	76	7032	77	212	78	18209
79	3008	80	-985	81	1901	82	5845	83	9277	84	2744	85	19480	86	1937	87	-1183
88	14982	89	16	90	7498	91	811163	93	1529	94	36530						

. . . . FINAL DEMAND SECTOR 98. FEDERAL CIVILIAN GOVERNMENT TOTAL 911887. . . . .

COMPOSITION OF COLUMN 98

ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT
1	13	2	-691	4	2	6	14	7	16	9	-195	12	18990	13	26454	14	355
15	3569	16	120	17	601	18	64	19	14	20	2	21	77	22	1443	24	226
26	651	27	336	29	5	30	111	31	665	32	832	33	63	34	-2073	35	2144
36	27	37	1000	38	23	39	414	40	693	41	4	42	11	43	182	44	-146
45	73	46	459	47	32	48	1633	49	1	50	612	51	352	52	221	55	40
56	34	57	803	58	290	59	360	60	63	61	2827	62	96	63	900	64	2
65	1	66	53804	67	605	68	413	69	1309	70	58562	71	5158	72	1078	73	232
74	-15	75	53922	76	1744	78	-4027	79	555	80	222	81	6970	82	1234	83	6965
84	3540	85	18912	86	1241	87	-90	88	21196	89	1264	90	3219	91	444292	93	41918
94	122853																

. . . . FINAL DEMAND SECTOR 99. FEDERAL DEFENSE EXPENUITURE TOTAL 1055276. . . . .

COMPOSITION OF COLUMN 99

ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT
1	5	2	43	4	91	6	500	9	413	12	14838	13	7478	24	220	27	1812
28	476	29	1413	30	608	31	483	32	221	33	293	34	2297	35	11993	36	339
37	5310	38	826	39	2152	40	4062	41	10	42	534	43	325	44	9255	45	2677
46	2516	47	237	48	1244	49	1926	50	5918	51	503	52	906	55	498	56	238
57	2473	58	1206	59	1782	60	833	61	1184	62	1386	63	1321	64	20	65	90
66	249818	67	3686	68	1650	69	7367	70	67699	71	22299	72	20844	73	1643	74	181
75	45965	76	10404	78	9689	79	2398	80	377	81	34837	82	691	83	9641	84	4351
85	19164	86	535	87	1484	88	23918	89	86	90	467	91	423127				

. . . . FINAL DEMAND SECTOR 100. CAPITAL FORMATION TOTAL 2305686. . . . .

COMPOSITION OF COLUMN 100

ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT
2	4427	4	735	9	43024	11	596307	12	365	13	36	22	795	24	151	26	246
27	474	28	40696	30	6937	31	18765	32	3526	33	268	34	48	35	1954	36	33
37	82	38	19752	39	2542	40	18639	41	89	42	11	43	9506	44	145931	45	21992
46	14281	47	3556	48	58968	49	752	50	103660	51	3874	52	17606	55	3536	56	4505
57	32265	58	27964	59	11906	60	1117	61	5641	62	33669	63	11844	64	356	65	1977
66	38691	67	516	68	3920	69	37623	70	21012	71	27244	72	5342	73	453	74	4844
75	23925	76	21339	78	3033	79	530	80	1908	81	320963	82	3999	83	1447	85	20711
86	11843	88	1832	89	6488	90	421	93	5610	94	467185						

. . . . FINAL DEMAND SECTOR 101. NET FOREIGN EXPORTS TOTAL -143036. . . . .

COMPOSITION OF COLUMN 101

ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT
2	58237	6	101	7	2052	14	939	15	554	16	586	17	5522	18	137	21	520
22	206	26	1345	27	497	29	43	30	80	31	141	33	99	34	723	36	7702
37	1288	38	451	45	6874	50	20462	51	4596	52	2197	55	2910	56	244	57	5003
58	6652	59	1904	60	203	61	1568	62	3906	63	1323	64	71	65	69	66	1739
67	367	68	734	70	338	72	15	75	97376	81	34529	93	-525931	94	108592		

. . . . FINAL DEMAND SECTOR 102. NET REGIONAL EXPORTS TOTAL -1799438. . . . .

COMPOSITION OF COLUMN 102

ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT	ROW	AMOUNT
1	16705	4	16861	9	2195	19	10223	21	1393	29	3334	33	32417	40	58018	43	41328
44	37378	45	236016	46	41077	49	133654	57	6500	56	25640	60	4562	66	58634	71	65692
76	20059	78	30096	79	183	81	51126	83	457589	85	122081	86	29442	87	13965	93	60699
94	-3376305																

APPENDIX III

DEMONSTRATION OF THE ENVIRONMENTAL MODEL

Tables 1 through 12 have been printed out, using hypothetical data to test the program and the model.[1] Descriptions of the tables and definitions of the notation are as follows:

TABLE 1

The coefficients presented in Table 1 represent the technological relationships between potential industrial waste loadings (by type) to the environment, and their market valued outputs.

Explanation:

The first row of this table shows the gross amount of each pollutant produced by industry number 1601 per unit of output in that same industry. The key below the table identifies industry number 1601 as "broadwoven frabric mills and fabric finishing plants". The key also identifies the pollutant types. For the purposes of this demonstration, the units of output are in monetary terms, and one million dollars has been selected as the unit. The pollutant units are in thousands of pounds; thus, the coefficients are dimensioned in thousands of pounds per million dollars. These coefficients may be calculated directly from the data, and together with other sets of coefficients, represent the basic analytical tools of the environmental model.

The coefficients for the gross amount of pollutants (gross residual) are calculated as follows: The amount of a particular type of gross residual thrown off by a given industry in the base year is divided by the amount of gross output, again for the base year, in that same industry. In matrix notation we have:

---

[1] Source: John H. Cumberland, "The Economics of Environmental Relationships", Paper prepared for the University of Florida, Department of Agricultural Economics, Seminar on Economics and Decision Making for Environmental Quality, 19 May 1971.

$$GRC(I, J) = \frac{GR(I, J)}{X(I)}$$

where: GR(I, J) = the amount of gross residual of type J produced by industry I, in thousands of pounds.

X(I) = the gross output in industry I in millions of dollars.

base year = 1963

These coefficients thus represent, in summary form, the technological relationships that existed in the base year between the various types of pollutants and the output of the industry in question.

It should be noted that for the purposes of the model, gross residual has been defined as that waste, or pollutant material, which cannot be recovered at a profit. It follows from this definition that the short-run profit maximizing firm (of the classical economics) would simply desire to get rid of this material as cheaply as possible, i.e., dispose of it to the environment. Thus, gross residual is, in a potential sense, the amount of pollutant that would be loaded upon the environment in absence of any voluntary restraints or legal standards.

TABLE 2

The coefficients presented in Table 2 represent the technological relationships between actual industrial waste loadings (by type) to the environment, and their market valued outputs.

Explanation:

This table is very similar to Table 1. Here the gross residual quantities have been replaced by net waste coefficients. Under this concept, net waste is defined as the sum of the gross residual that is discharged untreated, and the amount of gross residual that "escapes" treatment processes and does not meet prospective standards.

Thus, while Table 1 furnishes information on gross residual, or that amount of waste which potentially could be loaded upon the environment, Table 2 provides information on net waste, or that part of the gross residual that is actually loaded upon the environment. In matrix notation, the net waste coefficient is:

$$NWC(I, J) = \frac{NW\ (I, J)}{X(I)}$$

where: NW(I, J) = the amount of net waste of type J produced by industry I, in thousands of pounds.

X(I) = the gross output in industry I in millions of dollars.

base year = 1963

The net waste coefficient, like the gross residual coefficients in Table 1, reflects, in part, the technological relationship between an industry's monetary output and its generation of pollutants. It also reflects the nature of the various abatement technologies. Thus, these coefficients, which may be calculated directly from the data, represent one of the basic analytical tools of the model.

TABLE 3

The cost coefficients presented in Table 3 represent the average abatement expenditures, by industry, required to transform and reduce the gross residuals (Table 1) to the net waste levels (Table 2).

Explanation:

This table indicates the abatement expenditures, in coefficient terms (i.e., thousand dollars cost per million dollars output) associated with the treatment of the gross residual. It is this treatment which causes the net waste coefficients and totals (Tables 2 and 5) to differ from the gross residual coefficients and totals (Tables 1 and 4).

These treatment expenditures were generally not available for each pollutant separately; therefore, they were aggregated over air pollution abatement and water pollution abatement for each industry shown.

For both air and water pollution abatement, the costs are broken into capital (fixed costs) and annual (operating costs). The capital costs represent replacement value rather than amortized values. In the basic worksheets, cost data, both fixed and operating, are requested not only for each pollutant, but also for each treatment process where more than one may apply. Thus, the worksheets will generate a much more detailed cost table than is available for this demonstration.

The cost coefficients are generated in a manner similar to that employed to compute both the gross residual and net waste coefficients. The cost coefficient may be represented as:

$$CC(I, J) = \frac{C(I, J)}{X(I)}$$

where: C(I, J) = abatement expenditure of type J by industry I, in thousands of dollars.

X(I) = gross output in industry I in millions of dollars.

base year = 1963

These coefficients reflect the pollution abatement technology in 1963.

TABLE 4

Table 4 provides information, by pollutant type, on the gross residuals stemming from four industries in 1963.

Explanation:

Given Table 1, the levels of gross residual can be projected for any dollar value of industrial production. A computer program suitable for calculating such a projection has been developed, and the results of the calculations are given in Table 4.

The gross residual levels in Table 4 were generated by actual monetary gross output levels for 1963. Thus, these gross residual figures correspond (except for rounding errors) to the "actual" pollution levels in 1963. Forecasted gross output levels for any year may be employed at this stage to yield projected gross residuals. 1963 output data were used for this demonstration, however, in order to verify the validity of the program. In matrix notation, gross residual may be represented as:

$$GR(I, J) = GRC\ (I, J) \cdot X\ (I)$$

where: GRC (I, J) = gross residual coefficient for industry I and pollutant J (see Table 1)

X (I) = gross output of industry I projected or estimated for any year or set of assumptions

It should be noted that any use of the gross residual totals, which employ the gross residual coefficients for their formation, must be predicated on the existence of the same, or very similar, technology level as existed in the "base year." For instance, a gross residual projection for 1970 which employs the 1963 gross residual coefficients, implicitly assumes that the waste generating aspects of production remain relatively constant between those years. In a sense, this use of a base year "freezes" the technology to that of the same year. Thus, while projections from the base year coefficients are very useful, caution must be exercised in their usage. This is so because technology, and thus the coefficients themselves, may change over time.

In the basic worksheets, requests have been made for data estimates for future years. This information would enable the continued updating of the gross residual coefficients, and an explicit recognition of changes in production and abatement technologies.

TABLE 5

Table 5 provides information, by pollutant type, on the net waste stemming from four industries in 1963.

Explanation:

The net waste totals in this table were calculated from the net waste coefficients in Table 2 in a manner analagous to the computation of the gross residuals of Table 4. In matrix notation, net waste may be represented as:

$$NW(I, J) = NWC(I, J) \cdot X(I)$$

Where: NWC (I, J) = net waste coefficient for industry I and pollutant J (see Table 2)

X (I) = gross output of Industry I projected or estimated for any year or set of assumptions

As with Table 4, the coefficients for net waste "freeze" the technology to that in existence in the base year. Data requested on the basic worksheets will permit estimation of net waste coefficients for future years, and thus an explicit recognition of technology change.

TABLE 6

Table 6 provides information on the total fixed and operating costs required by four industries to reduce the gross residual to net waste.

Explanation:

The abatement expenditure totals in this table were calculated from the cost coefficients developed in Table 3. Although the table represents abatement expenditures for 1963, the base year, the model concept will enable abatement costs to be projected to any year for which an estimate of gross output is available. In matrix notation, the abatement expenditure of industry I for abatement type J is:

$$C(I, J) = CC(I, J) \cdot X(I)$$

where: $CC(I, J)$ = cost coefficient of industry I for abatement type J. (See Table 3)

$X(I)$ = gross output of industry I projected or estimated for any year or set of assumptions

TABLE 7

This table gives explicit recognition to the linkages between industry output and the demands for intermediate outputs (materials) required to satisfy that demand. Thus, industries create pollution by satisfying two types of demands for their products: final demands and intermediate demands. The table makes explicit the potential pollutant impact of various consumption goods.

Explanation:

Table 7 illustrates some of the benefits obtained by "tying" the basic model to an economic input-output model of the U.S. economy. Table 7 shows the gross residuals, by type, generated by the delivery of goods to final demand, by industry, per million dollars of final demand.

This can best be explained through an example. Industry number 2404, envelopes, sells some of its output to final consumers such as households. In order to produce these envelopes, industry number 2404 must purchase raw materials (intermediate outputs) from other producers such as industry number 1601, the paper pulp industry. In meeting this intermediate demand, the paper pulp industry generates some gross residual. In a like manner, other industries that are direct suppliers to the envelope industry also create some gross residual. Each of these industries, in turn, can only increase its production by increasing purchases from its direct suppliers. Thus, the structure of both production and waste generation exhibit "backward linkages." The input-output table furnishes an explicit definition of these linkages.

In Table 7, the amount of gross residual, by type, generated by all these indirect stages of production necessary to produce one million dollars of industry number 2404 delivery to final demand is summed. In matrix notation the calculation is as follows:

$$GRC^*(K, J) = \sum_{I=1}^{N} GRC(I, J) \cdot X^*(I, K)$$

where: GRC* (K, J) = the amount, in thousands of pounds, of gross residual of type J generated by production, both direct and indirect, resulting from the delivery of one million dollars of output by industry K to final demand.

GRC (I, J) = gross residual coefficient for industry I and pollutant type J.

X* (I, K) = the total amount of production in industry I required to produce one dollar of output in industry K.

The gross residual coefficient for the industry delivery to final demand does not include the gross residual generated by the production processes of the delivering industry itself. In this demonstration run of the basic model, the gross residual generated by the indirect production has been summed over the four industries shown in Tables 1 to 6 only. In the full implementation of the model, the summation process will be carried over all industries.

TABLE 8

This table, like Table 7, draws on the input-output structure of the U. S. economy. The table makes explicit the actual pollutant impact of various consumption goods.

Explanation:

In matrix notation the calculation is as follows:

$$NWC^*(K, J) = \sum_{I=1}^{N} NWC(I, J) \cdot X^*(I, K)$$

where: $NWC^*(K, J)$ = the amount, in thousands of pounds, of net waste of type J generated by production, both direct and indirect, resulting from the delivery of one dollar of output by industry K to final demand.

$NWC(I, J)$ = net waste coefficient for industry I and pollutant type J.

$X^*(I, K)$ = the total amount of production in industry I required to produce one million dollars of output in industry K.

TABLE 9

This table, like 7 and 8, draws on the input-output structure of the U. S. economy. The table makes explicit the actual cost of expenditure involved in abating the pollutants generated by production resulting from the purchase of consumption goods.

Explanation: In matrix notation the calculation is as follows:

$$CC^*(I,K) = \sum_{I=1}^{N} CC(I,J) \cdot X^*(I,K)$$

where: $CC^*(K,J)$ = the amount, in thousands of dollars, of expenditure presently involved in abating the pollution generated by production resulting from the delivery of one dollar of output by industry K to final demand.

$CC(I,J)$ = cost coefficient for industry I and pollutant type J.

$X^*(I,K)$ = the total amount of production in industry I required to produce one million dollars of output in industry K.

TABLE 10

This table, like Table 7, draws on the input-output structure of the U.S. economy. The table would show, as a coefficient, the pollution generated by production resulting from purchases of one million dollars by a given final demand sector, such as households.

Explanation:

$$GRCF(L,J) = \sum_{I=1}^{N} GRC(I,J) \cdot XF(I,L)$$

where: $GRCF(L,J)$ = the amount, in thousands of pounds, of gross residual of type J, generated by production resulting from one million dollars of purchases by final demand sector L.

$GRC(I,J)$ = gross Residual coefficient for industry I and pollutant type J.

$XF(I,L)$ = the total amount of production in industry I resulting from purchases of one dollar by final demand sector L.

Tables similar to this could also be calculated to obtain net waste coefficients and cost coefficients for a given final demand sector

$$NWCF(L,J) = \sum_{I=1}^{N} NWC(I,J) \cdot XF(I,L)$$

$$CCF(L,J) = \sum_{I=1}^{N} CC(I,J) \cdot XF(I,L)$$

TABLE 11

This table would show the amount of expenditure, for each industry and pollutant type, necessary to meet prospective emission and/or treatment standards.

Explanation:

$$CA(I,J) = CAC(I,J) \cdot X(I)$$

where: $CA(I,J)$ = the additional amount of expenditure by industry I on pollutant type J that would by necessary if that industry were to meet prospective emission and/or treatment standards.

$CAC(I,J)$ = the coefficient indicating the additional amount of expenditure on pollutant type J in thousands of dollars per million dollars of output in industry I that would be necessary if that industry were to meet prospective emission and/or treatment standards.

$X(I)$ = production in industry I in millions of dollars.

The additional cost coefficients, CAC(I,J), would be determined on the basis of information supplied from the basic worksheets.

TABLE 12

This table would draw on the input-output structure of the U.S. economy. The table indicates the results of an estimation process which yields the amount of additional expenditure necessary to meet prospective standards associated with the production, in all industries, resulting from one million dollars of delivery to final demand by a given industry. These figures could also be taken as an estimate of the percentage increase (expressed in tenths of percents) in the price of the good delivered to final demand, resulting from the additional expenditures necessary to meet standards.

Explanation:

$$CAC^{*}(K,J) = CAC(I,J) \cdot X^{*}(I,K)$$

where: $CAC^{*}(K,J)$ = the additional expenditure coefficient expressing the amount of additional expenditure of type J, in thousands of dollars per million dollars, necessary so that the pollution generated by production resulting from one million dollars of delivery to final demand by industry K is abated to meet prospective emission and/or treatment standards.

$CAC(I,J)$ = the amount of additional expenditure of type J, in thousands of dollars, necessary in order that industry I meet prospective emission and/or treatment standards.

$X^{*}(I,K)$ = the total amount of production in industry I required to produce one dollar of output in industry K.

TABLE 13
(Not displayed)

This table is the basic control table for the model. As previously indicated the model explicity recognizes the necessity of a materials balance. Since matter cannot be destroyed or created (except for insignificant amounts in nuclear reactions) none of the gross residual materials dissappear but must be disposed of in some way.

Thus in Table 13 the gross residual is allocated into exhaustive and mutually exclusive final disposition categories. The total weight of the materials entered into these categories should equal the total gross residual generated (as shown in Table 4). Tables for the final disposition of gross residual and gross residual generated are developed independently in the worksheets. Hence, an essential cross-check is provided. At every level of aggregation it can be determined whether the final disposition items do indeed account for all gross residual. Table 13 is derived directly from the worksheets.

TABLE 14
(Not displayed)

In a sense this table is the final output of the model. It shows the total material emitted to the environment by production processes and by external contractors who treat industrial wastes.

This total material includes not only gross residual discharged untreated, and gross residual escapements from treatment processes, but also treatment residuals. Many treatment processes simply collect gross residual and alter its form but still eventually release this material to some environmental medium. Although the treatment process, by altering its form, renders the gross residual less harmful, the processed material (the terminology for this material is "treatment residual") is still very likely to have some effect.

TABLE 1

GROSS RESIDUAL COEFFICIENT, INDICATING GROSS RESIDUAL, BY TYPE, IN THOUSAND LBS., GENERATED BY $ ONE MILLION OF GROSS OUTPUT, 1963

OBE	1	2	3	4	5	6	7	8	9	10	11
1601	.000	.000	79.700	32.800	81.500	.000	.000	.000	.000	.000	.000
2402	.000	.000	518.000	467.000	2040.000	.000	.000	.000	.000	.000	.000
3701	202.000	.000	.000	700.000	.000	15.400	89.200	.298	2.660	.980	.162
3804	294.000	74.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

KEY
POLLUTANTS
1= PARTICULATE MATTER
2= HYDROGEN FLORIDE
3= SUSPENDED SOLIDS
4= BOD
5= DISSOLVED SOLIDS
6= LUBE OILS
7= ACIDS
8= SOLUBLE METALS
9= EMULSIONS
10= COKE PLANT CHEMICALS
11= fluorides

INDUSTRIES
1601= BROADWOVEN FABRIC MILLS AND FABRIC FINISHING PLANTS
1804= APPAREL MADE FROM PURCHASED MATERIALS
2402= PAPER MILLS, EXCEPT BUILDING PAPER
2404= ENVELOPES
2601= NEWSPAPERS
3701= BLAST FURNACE AND BASIC STEEL PRODUCTS
3804= PRIMARY ALUMINUM
3901= METAL CANS
4005= METAL DOORS, SASH AND TRIM
5402= HOUSEHOLD REFRIGERATORS AND FREEZERS

DATA

TABLE 2

NET WASTE COEFFICIENT, INDICATING NET WASTE, BY TYPE, IN THOUSAND LBS., GENERATED BY $ ONE MILLION OF GROSS OUTPUT, 1963

OBE	1	2	3	4	5	6	7	8	9	10	11
1601	.000	.000	36.500	15.200	38.900	.000	.000	.000	.000	.000	.000
2402	.000	.000	69.300	63.300	277.000	.000	.000	.000	.000	.000	.000
3701	35.300	.000	.000	47.900	.000	10.600	50.500	.278	9.600	.334	.177
3804	14.700	.000	.000	.000	.000	.000	.000	.000	.000	.000	71.000

KEY
POLLUTANTS
1= PARTICULATE MATTER
2= HYDROGEN FLORIDE
3= SUSPENDED SOLIDS
4= BOD
5= DISSOLVED SOLIDS
6= LUBE OILS
7= ACIDS
8= SOLUBLE METALS
9= EMULSIONS
10= COKE PLANT CHEMICALS
11= fluorides

INDUSTRIES
1601= BROADWOVEN FABRIC MILLS AND FABRIC FINISHING PLANTS
1804= APPAREL MADE FROM PURCHASED MATERIALS
2402= PAPER MILLS, EXCEPT BUILDING PAPER
2404= ENVELOPES
2601= NEWSPAPERS
3701= BLASTFURNACE AND BASIC STEEL PRODUCTS
3804= PRIMARY ALUMINUM
3901= METAL CANS
4005= METAL DOORS, SASH AND TRIM
5402= HOUSEHOLD REFRIGERATORS AND FREEZERS

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DATA                                                                 TABLE 3

COST COEFFICIENTS, INDICATING THE COST OF ABATING TO 1963 NET WASTE LEVELS, $ THOUSAND PER $ MILLION OF OUT PUT

OBE          1          2          3          4

1601      .000       .000      2.320       .657

2402      .000       .000     43.600      4.560

3701    16.000     10.200     43.300      7.000

3804     5.070       .507       .000       .000


KEY
COSTS
1= AIR POLLUTION ABATEMENT, FIXED COSTS
2= AIR POLLUTION ABATEMENT, OPERATING COSTS
3= WATER POLLUTION ABATEMENT, FIXED COSTS
4= WATER POLLUTION ABATEMENT, OPERATING COSTS


INDUSTRIES
1601= BROADWOVEN FABRIC MILLS AND FABRIC FINISHING PLANTS
1804= APPAREL MADE FROM PURCHASED MATERIALS
2402= PAPER MILLS, EXCEPT BUILDING PAPER
2404= ENVELOPES
2601= NEWSPAPERS
3701= BLASTFURNACE AND BASIC STEEL PRODUCTS
3804= PRIMARY ALUMINUM
3901= METAL CANS
4005= METAL DOORS, SASH AND TRIM
5402= HOUSEHOLD REFRIGERATORS AND FREEZERS
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DATA                                                                                    TABLE 4


GROSS RESIDUAL BY INDUSTRY, 1963, THOUSAND LBS.

OBE            1          2          3          4          5          6          7          8          9         10         11
1601          0.         0.    836850.    344400.    855750.         0.         0.         0.         0.         0.         0.
2402          0.         0.   2617454.   2359751.  10308120.         0.         0.         0.         0.         0.         0.
3701    4040000.         0.         0.  14000000.         0.    308000.   1784000.      5960.     53200.     19600.      3640.
3804     579180.    145780.         0.         0.         0.         0.         0.         0.         0.         0.         0.


KEY
POLLUTANTS
1= PARTICULATE MATTER
2= HYDROGEN FLORIDE
3= SUSPENDED SOLIDS
4= BOD
5= DISSOLVED SOLIDS
6= LUBE OILS
7= ACIDS
8= SOLUBLE METALS
9= EMULSIONS
10= COKE PLANT CHEMICALS
11= fluorides


INDUSTRIES
1601= BROADWOVEN FABRIC MILLS AND FABRIC FINISHING PLANTS
1804= APPAREL MADE FROM PURCHASED MATERIALS
2402= PAPER MILLS, EXCEPT BUILDING PAPER
2404= ENVELOPES
2601= NEWSPAPERS
3701= BLASTFURNACE AND BASIC STEEL PRODUCTS
3804= PRIMARY ALUMINUM
3901= METAL CANS
4005= METAL DOORS, SASH AND TRIM
5402= HOUSEHOLD REFRIGERATORS AND FREEZERS
```

DATA

TABLE 5

NET WASTE BY INDUSTRY, 1963, THOUSAND LBS

OBE	1	2	3	4	5	6	7	8	9	10	11
1601	0.	0.	320250.	159600.	408450.	0.	0.	0.	0.	0.	0.
2402	0.	0.	350173.	319855.	1399681.	0.	0.	0.	0.	0.	0.
3701	706000.	0.	0.	958000.	0.	212000.	1010000.	5560.	192000.	6680.	3540.
3804	28959.	0.	0.	0.	0.	0.	0.	0.	0.	0.	139870.

KEY
POLLUTANTS
1= PARTICULATE MATTER
2= HYDROGEN FLORIDE
3= SUSPENDED SOLIDS
4= BOD
5= DISSOLVED SOLIDS
6= LUBE OILS
7= ACIDS
8= SOLUBLE METALS
9= EMULSIONS
10= COKE PLANT CHEMICALS
11= fluorides

INDUSTRIES
1601= BROADWOVEN FABRIC MILLS AND FABRIC FINISHING PLANTS
1804= APPAREL MADE FROM PURCHASED MATERIALS
2402= PAPER MILLS, EXCEPT BUILDING PAPER
2404= ENVELOPES
2601= NEWSPAPERS
3701= BLASTFURNACE AND BASIC STEEL PRODUCTS
3804= PRIMARY ALUMINUM
3901= METAL CANS
4005= METAL DOORS, SASH AND TRIM
5402= HOUSEHOLD REFRIGERATORS AND FREEZERS

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DATA                                                                        TABLE 6


EXPENDITURES FOR ABATEMENT, 1963, THOUSAND $


OBE             1           2           3           4

1601            0.          0.      24360.       6898.

2402            0.          0.     220311.      23042.

3701       320000.     204000.     866000.     140000.

3804         9988.        999.          0.          0.



KEY
COSTS
1= AIR POLLUTION ABATEMENT, FIXED COSTS
2= AIR POLLUTION ABATEMENT, OPERATING COSTS
3= WATER POLLUTION ABATEMENT, FIXED COSTS
4= WATER POLLUTION ABATEMENT, OPERATING COSTS



INDUSTRIES
1601= BROADWOVEN FABRIC MILLS AND FABRIC FINISHING PLANTS
1804= APPAREL MADE FROM PURCHASED MATERIALS
2402= PAPER MILLS, EXCEPT BUILDING PAPER
2404= ENVELOPES
2601= NEWSPAPERS
3701= BLASTFURNACE AND BASIC STEEL PRODUCTS
3804= PRIMARY ALUMINUM
3901= METAL CANS
4005= METAL DOORS, SASH AND TRIM
5402= HOUSEHOLD REFRIGERATORS AND FREEZERS
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TABLE 7

GROSS RESIDUAL COEFFICIENTS, INDICATING GROSS RESIDUAL, BY TYPE, IN THOUSAND LBS., GENERATED BY GROSS OUTPUT RESULTING FROM DELIVERY OF ONE MILLION DOLLARS OF PRODUCT TO FINAL DEMAND, BY INDUSTRY, 1963

OBE	1	2	3	4	5	6	7	8	9	10	11
1804	1.414	74.550	12.358	2.354	90.255	8.871	1.940	11.239	.038	.335	.123
2404	14.406	33.053	.947	4.827	105.710	18.166	2.233	12.934	.043	.386	.142
2601	9.984	.032	110.668	133.768	434.861	.752	4.353	.015	.130	.048	.009
3901	109.427	.087	7.005	384.259	27.250	8.316	48.168	.161	1.436	.529	.098
4005	74.550	12.358	2.354	90.255	8.871	1.940	11.239	.038	.335	.123	.023
5402	33.053	.947	4.827	105.710	18.166	2.233	12.934	.043	.386	.142	.026

KEY
POLLUTANTS
1= PARTICULATE MATTER
2= HYDROGEN FLORIDE
3= SUSPENDED SOLIDS
4= BOD
5= DISSOLVED SOLIDS
6= LUBE OILS
7= ACIDS
8= SOLUBLE METALS
9= EMULSIONS
10= COKE PLANT CHEMICALS
11= fluorides

INDUSTRIES
1601= BROADWOVEN FABRIC MILLS AND FABRIC FINISHING PLANTS
1804= APPAREL MADE FROM PURCHASED MATERIALS
2402= PAPER MILLS, EXCEPT BUILDING PAPER
2404= ENVELOPES
2601= NEWSPAPERS
3701= BLASTFURNACE AND BASIC STEEL PRODUCTS
3804= PRIMARY ALUMINUM
3901= METAL CANS
4005= METAL DOORS, SASH AND TRIM
5402= HOUSEHOLD REFRIGERATORS AND FREEZERS

DATA

TABLE 8

NET WASTE COEFFICIENTS, INDICATING NET WASTE, BY TYPE, IN THOUSAND LBS., GENERATED BY GROSS OUTPUT RESULTING FROM DELIVERY OF ONE MILLION DOLLARS OF PRODUCT TO FINAL DEMAND, BY INDUSTRY, 1963

OBE	1	2	3	4	5	6	7	8	9	10	11
1804	.023	6.903	.000	.349	6.332	1.252	1.336	6.363	.035	1.410	.042
2404	.026	5.307	.000	.718	7.555	2.568	1.537	7.322	.040	1.392	.046
2601	1.729	.000	14.889	15.884	59.164	.517	2.464	.014	.468	.016	.039
3901	19.079	.000	.966	26.730	3.741	5.724	27.270	.150	5.184	.180	.179
4005	6.903	.000	.349	6.332	1.252	1.336	6.363	.035	1.210	.042	.097
5402	5.307	.000	.718	7.555	2.568	1.537	7.322	.040	1.392	.048	1.126

KEY
POLLUTANTS
1= PARTICULATE MATTER
2= HYDROGEN FLORIDE
3= SUSPENDED SOLIDS
4= BOD
5= DISSOLVED SOLIDS
6= LUBE OILS
7= ACIDS
8= SOLUBLE METALS
9= EMULSIONS
10= COKE PLANT CHEMICALS
11= fluorides

INDUSTRIES
1601= BROADWOVEN FABRIC MILLS AND FABRIC FINISHING PLANTS
1804= APPAREL MADE FROM PURCHASED MATERIALS
2402= PAPER MILLS, EXCEPT BUILDING PAPER
2404= ENVELOPES
2601= NEWSPAPERS
3701= BLASTFURNACE AND BASIC STEEL PRODUCTS
3804= PRIMARY ALUMINUM
3901= METAL CANS
4005= METAL DOORS, SASH AND TRIM
5402= HOUSEHOLD REFRIGERATORS AND FREEZERS

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DATA                                                                  TABLE 9


COST OF ABATEMENT COEFFICIENTS, INDICATING THE COST OF ABATEMENT IN THOUSAND DOLLARS, ASSOCIATED WITH GROSS OUTPUT RESULTING FROM
THE DELIVERY OF ONE MILLION DOLLARS OF PRODUCT TO FINAL DEMAND, BY INDUSTRY, 1963


OBE           1         2         3         4

1804       .097     2.863     1.370     5.646

2404      1.128     2.385     1.485     6.669

2601       .783      .498    11.410     1.316

3901      8.646     5.509    23.965     3.842

4005      2.863     1.370     5.646      .903

5402      2.385     1.485     6.669     1.057



KEY
COSTS
1= AIR POLLUTION ABATEMENT, FIXED COSTS
2= AIR POLLUTION ABATEMENT, OPERATING COSTS
3= WATER POLLUTION ABATEMENT, FIXED COSTS
4= WATER POLLUTION ABATEMENT, OPERATING COSTS


INDUSTRIES
1601= BROADWOVEN FABRIC MILLS AND FABRIC FINISHING PLANTS
1804= APPAREL MADE FROM PURCHASED MATERIALS
2402= PAPER MILLS, EXCEPT BUILDING PAPER
2404= ENVELOPES
2601= NEWSPAPERS
3701= BLASTFURNACE AND BASIC STEEL PRODUCTS
3804= PRIMARY ALUMINUM
3901= METAL CANS
4005= METAL DOORS, SASH AND TRIM
5402= HOUSEHOLD REFRIGERATORS AND FREEZERS
```

DATA

TABLE 10A

GROSS RESIDUAL COEFFICIENT, INDICATING GROSS RESIDUAL, BY TYPE, IN THOUSAND LBS., GENERATED BY PRODUCTION RESULTING FROM $ ONE MILLION OF PURCHASES BY SELECTED FINAL DEMAND SECTORS' 1963

SECTOR	1	2	3	4	5	6	7	8	9	10	11
1	4.028	.109	6.749	17.603	20.977	.274	1.588	.005	.047	.017	.003
2	212.145	6.519	3.442	648.314	12.430	14.199	82.242	.275	2.453	.904	.168
3	85.398	2.886	48.478	296.304	169.490	5.636	32.647	.109	.974	.359	.067
4	7.679	.362	2.694	23.899	9.657	.476	2.756	.009	.082	.030	.006
5	6.300	.203	2.735	21.402	10.152	.419	2.426	.008	.072	.027	.005

KEY
POLLUTANTS
1= PARTICULATE MATTER
2= HYDROGEN FLORIDE
3= SUSPENDED SOLIDS
4= BOD
5= DISSOLVED SOLIDS
6= LUBE OILS
7= ACIDS
8= SOLUBLE METALS
9= EMULSIONS
10= COKE PLANT CHEMICALS
11= fluorides

SECTORS
1=PERSONAL CONSUMPTION EXPENDITURES
2=GROSS PRIVATE FIXED CAPITAL FORMATION
3=GROSS EXPORTS
4=FEDERAL GOVERNMENT PURCHASES
5=STATE AND LOCAL GOVERNMENT PURCHASES

DATA

TABLE 105

NET WASTE COEFFICIENT, INDICATING NET WASTE, BY TYPE, IN THOUSAND LBS., GENERATED BY PRODUCTION RESULTING FROM $ ONE MILLION OF PURCHASES BY SELECTED FINAL DEMAND SECTORS, 1963

SECTOR	1	2	3	4	5	6	7	8	9	10	11
1	.650	.000	1.381	1.809	3.519	.189	.899	.005	.171	.006	.106
2	33.842	.000	.556	44.611	1.823	9.773	46.561	.256	8.651	.308	6.416
3	13.493	.000	8.315	23.959	25.580	3.880	18.483	.102	3.514	.122	2.834
4	1.163	.000	.442	1.832	1.425	.328	1.560	.009	.297	.010	.353
5	1.000	.000	.419	1.652	1.453	.288	1.374	.008	.261	.009	.199

KEY
POLLUTANTS
1= PARTICULATE MATTER
2= HYDROGEN FLORIDE
3= SUSPENDED SOLIDS
4= BOD
5= DISSOLVED SOLIDS
6= LUBE OILS
7= ACIDS
8= SOLUBLE METALS
9= EMULSIONS
10= COKE PLANT CHEMICALS
11= fluorides

SECTORS
1=PERSONAL CONSUMPTION EXPENDITURES
2=GROSS PRIVATE FIXED CAPITAL FORMATION
3=GROSS EXPORTS
4=FEDERAL GOVERNMENT PURCHASES
5=STATE AND LOCAL GOVERNMENT PURCHASES

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DATA                                                                 TABLE 10C


COST OF ABATEMENT COEFFICIENTS, INDICATING COST OF ABATEMENT, IN THOUSAND $, GENERATED BY PRODUCTION RESULTING FROM $ ONE MILLION
OF PURCHASES BY SELECTED FINAL DEMAND SECORS, 1963


SECTOR          1         2         3         4

   1          .292      .182     1.233      .183      .000      .000      .000      .000      .000      .000      .000

   2        15.199     9.449    40.191     6.484      .000      .000      .000      .000      .000      .000      .000

   3         6.054     3.753    19.524     2.985      .000      .000      .000      .000      .000      .000      .000

   4          .519      .318     1.547      .240      .000      .000      .000      .000      .000      .000      .000

   5          .449      .279     1.396      .214      .000      .000      .000      .000      .000      .000      .000


KEY
COSTS
1= AIR POLLUTION ABATEMENT, FIXED COSTS
2= AIR POLLUTION ABATEMENT, OPERATING COSTS
3= WATER POLLUTION ABATEMENT, FIXED COSTS
4= WATER POLLUTION ABATEMENT, OPERATING COSTS


SECTORS
1=PERSONAL CONSUMPTION EXPENDITURES
2=GROSS PRIVATE FIXED CAPITAL FORMATION
3=GROSS EXPORTS
4=FEDERAL GOVERNMENT PURCHASES
5=STATE AND LOCAL GOVERNMENT PURCHASES
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DATA                                                         TABLE II


ADDITIONAL COST COEFFICIENTS, INDICATING ADDITIONAL COST OF ABATEMENT, IN THOUSAND $, REQUIRED TO MEET  PROSPECTIVE STANDARDS, 1963


OBE             1         2         3         4

1601         .000      .000     3.560     1.050

2402         .000      .000    27.500     5.720

3701        5.780    11.200    57.200     6.000

3804         .000      .000     1.020     1.113



KEY
COSTS
1= AIR POLLUTION ABATEMENT, FIXED COSTS
2= AIR POLLUTION ABATEMENT, OPERATING COSTS
3= WATER POLLUTION ABATEMENT, FIXED COSTS
4= WATER POLLUTION ABATEMENT, OPERATING COSTS



INDUSTRIES
1601= BROADWOVEN FABRIC MILLS AND FABRIC FINISHING PLANTS
1804= APPAREL MADE FROM PURCHASED MATERIALS
2402= PAPER MILLS, EXCEPT BUILDING PAPER
2404= ENVELOPES
2601= NEWSPAPERS
3701= BLASTFURNACE AND BASIC STEEL PRODUCTS
3804= PRIMARY ALUMINUM
3901= METAL CANS
4005= METAL DOORS, SASH AND TRIM
5402= HOUSEHOLD REFRIGERATORS AND FREEZERS
```

DATA

TABLE 12

ADDITIONAL COST COEFFICIENTS INDICATING ADDITIONAL COST OF ABATEMENT, IN THOUSAND $, FOR WASTE MATERIALS GENERATED BY PRODUCTION RESULTING FROM DELIVER OF ONE MILLION $ TO FINAL DEMAND, BY INDUSTRY, 1963

OBE	1	2	3	4
1804	.033	.903	3.649	9.083
2404	.406	.787	12.602	2.210
2601	.282	.547	8.664	1.516
3901	3.121	6.048	31.260	3.319
4005	.728	1.411	7.501	.968
5402	.903	3.649	9.083	.938

KEY
COSTS
1= AIR POLLUTION ABATEMENT, FIXED COSTS
2= AIR POLLUTION ABATEMENT, OPERATING COSTS
3= WATER POLLUTION ABATEMENT, FIXED COSTS
4= WATER POLLUTION ABATEMENT, OPERATING COSTS

INDUSTRIES
1601= BROADWOVEN FABRIC MILLS AND FABRIC FINISHING PLANTS
1804= APPAREL MADE FROM PURCHASED MATERIALS
2402= PAPER MILLS, EXCEPT BUILDING PAPER
2404= ENVELOPES
2601= NEWSPAPERS
3701= BLASTFURNACE AND BASIC STEEL PRODUCTS
3804= PRIMARY ALUMINUM
3901= METAL CANS
4005= METAL DOORS, SASH AND TRIM
5402= HOUSEHOLD REFRIGERATORS AND FREEZERS

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10500.000      .433      .028      .004      .001      .052      .004
 5053.000      .006      .311      .213      .013      .004      .009
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